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INDIAN MARINE SURVEYS.

One of the most obvious duties of a Government ruling a country with an extensive sea-board and a great sea-borne trade, is to provide for the safety of the vessels which frequent her ports, by the provision of lighthouses and buoys, and, above all, by the preparation of reliable charts and sailing directions. Some works and duties, such as the construction of railways and canals, may sometimes be undertaken by the State and sometimes by private persons; but there are others which, from their nature, must be the business of the Government. Among the latter, the erection of lighthouses and the execution of marine surveys are the most obvious. They must either be undertaken by the State or not at all. As regards Great Britain these duties have always been fully recognized, though often indifferently performed; and they have been divided between the mother country and her great Indian dependency.

While the important work of the Hydrographical Department of the Admiralty, some account of which will be found in our number for April, page 18, has ensured the safety of our ships in approaching the shores and harbours, not only of our own islands, but of other countries far and near, the great East India Company undertook a similar responsibility along the shores of those eastern countries, of the trade of which it so long held the monopoly. As the commerce with India and the far East continued to increase, the necessity for reliable charts and sailing directions became more pressing; while at the same time an armed marine, which was formed at Bombay, very early in the last century, to resist the pirates of the west coast of India, furnished the rough material for surveyors. In fact, the East India Company took the lead, and was in advance of the Admiralty, both in organizing efficient surveys and in appointing a hydrographer to utilize their results. Mr. Alexander Dalrymple, a Madras civilian and a most indefatigable collector of geographical materials, was appointed hydrographer to the East India Company in 1779. The same officer was the first hydrographer of the Admiralty, retaining his appointment under the Company, and holding both places from 1795 until his death in 1808.

Dalrymple's work from 1779 to 1808, a service of nearly thirty years as Indian hydrographer, was extremely valuable: it chiefly consisted in the collection and publication of all existing materials. He not only engraved the charts of our own surveyors, but collected all the previous surveys of Van Keulen and other Dutch navigators. He thus accumulated a vast number of engraved charts of varying age and value. An almost complete collection of them has been saved from destruction and made available for reference by the present Geographical Department of the India Office, where they have proved of practical use on several occasions: for in the consideration of questions connected with the improvement of harbours and other kindred projects, the means of reference to documents showing the state of harbours and coast lines at various periods, is always desirable and often very important.

Before Dalrymple assumed his position as hydrographer, the work of the marine surveys had been commenced in India. There was a local hydrographical surveyor at Calcutta, in the person of Captain John Ritchie, from 1770 to 1785, whose charts were engraved by Dalrymple, and whose manuscript notes are preserved in the Geographical Department of the India Office. He delineated the coasts of part of the Bay of Bengal; but his latitudes and longitudes were taken afloat, and his soundings were barely more than sufficient to show the tracks of his vessel. His successors were Captains Huddert, McCluer, Wedgborough, Blair, and Topping. Huddert fixed a series of positions along the Malabar coast, between 1780 and 1790; McCluer continued the surveys on the west coast between 1790 and 1793, and Lieutenant Wedgborough prepared the charts, which were promptly engraved by Dalrymple. Lieutenant Blair was very actively engaged, between 1777 and 1795, on the Kattiwar coast, Salsette, and various patches here and there; but his great work was the survey of the Andaman Islands, an account of which was recently re-published in the selections from the Records of the Government of India.* Port Blair is named after this surveyor. Old Michael Topping was the inaugurator of surveying work on the Madras side. In 1788 he prepared a rough chart of the Bay of Bengal; in 1790 he made a plan of the anchorage at Coringa and the mouths of the Godavari, accompanying it with a valuable memoir; and in 1794 he became chief surveyor at Madras, where he drew up a general plan for the improvement of the navigation of the Indian seas. To this early period may be referred also the work done in the Red Sea by Sir Home Popham's officers in 1800, and by Captains Court and Maxfield, in 1806, under the auspices of Lord Valentia.

* Home, No. 24.

Dalrymple's term of office covers the first period of Indian Marine Surveys, when there was no attempt at a trigonometrical basis; positions were fixed from the ships, and soundings did little more than show the ship's tracks. With Horsburgh in England, and Court and Ross in India, commenced an improved and more scientific system; and the Horsburgh reign, from 1810 to 1836, was the most flourishing and efficient period of Indian Marine Surveys.

James Horsburgh, commencing life as a cook and cabin boy, eventually rose to the command of an Indiaman, and on his return to England in 1806, the publication of a set of his charts at once placed him in the first rank of hydrographers. After many years of indefatigable research, he completed his *East India Directory*, which is still the recognized guide for the navigation of the Indian seas. The first edition appeared in 1808; the eighth in 1865; and the ninth and last, edited by Captain A. Taylor, and adapted for the new route to India by the Suez Canal, was reviewed in our number for April, page 27. Horsburgh continued to superintend the compilation and publication of charts, the results of Indian surveys, from 1810, until his death in 1836. When Horsburgh took up his appointment in Leadenhall Street, Captain Court was selected for the post of Marine Surveyor-General at Calcutta; and Captain Daniel Ross, "the Father of the Indian Surveys," was engaged in surveying the coast of China. Ross's charts were published as they were completed, and the whole were incorporated into a general chart by Captain Horsburgh; while Court, Maxfield, and Maughan did similar work in the Bay of Bengal. On the death of Captain Court, in 1823, he was succeeded at Calcutta by Daniel Ross, who was the first to organize a really scientific method in Indian Marine Surveys. In 1828 there was one of those fits of ruinous economy which periodically sweep over India, and do as much harm as a war or a famine. But stout old Ross weathered the storm. He was unceasing and importunate in urging the resumption of efficient surveys, and in 1830 he, and his second lieutenant Lloyd, were again at work on the Arracan coast, and the Mergui archipelago. Ross did his work with great care and regard for scientific accuracy, and it was all on a trigonometrical basis. He measured bases on shore, and all the angles were verified by astronomical observations. He resigned in 1833, and was succeeded by his able assistant Lloyd, who surveyed the whole sea face of the Sunderbuns, and continued the work of his predecessor with zeal and energy. But on his retirement, in 1840, the Marine Surveyor-Generalship at Calcutta, was abolished. The work of the Indian surveyors of this earlier period was very good. Admiral Collinson, when surveying in China, had opportunities of testing several of their charts, and he bears testimony to their accuracy. Indeed it surprised him to find how much further advanced the Indian officers were than the marine surveyors of the same period in England.

During the twenty years between 1820 and 1840 there was much admirable work achieved by the surveying officers on the Bombay side of India. The Persian Gulf was surveyed by Captain Guy, who commenced the work in 1820, and completed by Captain Brucks and Lieutenant Haines in 1830; and in the course of this service we find in the list of Persian Gulf surveyors several distinguished and well-known names, who then commenced their training. There were Haines, the first Governor of Aden; Kempthorne, the commentator of the voyage of Nearchus; Ethersey, the surveyor of the Gulf of Cambay; Lynch, the future explorer of the Euphrates; and Whitelock, the author of several interesting papers; while the charts were drawn by Lieutenant Houghton, a most accomplished draughtsman. When the old Bombay Marine was converted into the Indian Navy, in 1832, a fresh impetus was given to the surveys. Sir Charles Malcolm came out as the first commodore, and the surveying service saw its most palmy days during his administration. He was also the founder of the Bombay Geographical Society, and afterwards one of the most active promoters of the Hakluyt Society. The survey of the Red Sea was commenced by Captains Moresby and Elwon in 1830; the former opening the work of the northern half by measuring a base at Suez. The survey was steadily continued to its completion in 1834, by a system of triangulation down either shore. The sea was then practically unknown, and great dangers and privations were inseparable from such a service; but the officers were admirably selected, and steadily faced and overcame the difficulties. Under Captain Moresby were Barker, the future Abyssinian traveller; Wellsted, the accomplished author; Christopher, the explorer of the Indus, who afterwards fell gloriously at Multan; and Felix Jones, who, though then very young, was already pre-eminent as a skilled draughtsman. After the completion of the Red Sea Survey, Captain Moresby surveyed the Maldive Islands between 1834 and 1838; Powell and Ethersey examined the coasts of the Gulf of Manaar; and the south coast of Arabia was surveyed by Captain Haines, assisted by Sanders, Cruttenden, and Grieve. During this period Ethersey, in a miserable native craft, executed the existing survey of the Gulf of Cambay, of portions of the coast between Surat and Bombay, and of the dangerous shoals off Surat, called the Malacca Banks. In these years also Lieutenants Wood and Carless explored the Indus, and Wood crowned the geographical services of the Indian Navy, in 1838, by the discovery of the source of the Oxus.

After the retirement of Sir Charles Malcolm, all the surveying vessels were recalled, and from 1839 to 1844 the surveys were almost entirely suspended. Indeed, from 1838 until the destruction of all progress in 1861, the surveys are due to the zeal of the officers themselves, working in the face of every sort of official discouragement and obstruction, and no share of credit belongs to their superiors. Men who had been trained under Lloyd and Moresby, and whose zeal had been encouraged by Sir Charles Malcolm during several years of progress, could not so easily be turned from their useful careers. They worked on, in spite of official discouragement. The provision for the compilation of their charts was incredibly wretched. The chart office was in one corner of a sail loft in Bombay dockyard, where the cockroaches and white ants fed upon documents of priceless value; and the office of draughtsman, held by Captain Montriou from 1847 to 1852, and by Lieutenant Fergusson from 1852 until the end came in 1862, was only represented by an establishment consisting of one officer and two natives for copying, at a total cost of 500*l.* a year. It was under such a system, and in wretchedly ill-found

vessels, that Captain Sanders completed the survey of the Arabian coast; that Selby trigonometrically surveyed the west coast of India from Cape Comorin to Beypur, and the Bombay bank of soundings; that Carless made a beautiful survey of the African coast from Ras Hafun to Ras Gulwaini; and that Taylor made his admirable survey of the Gulf of Cutch. But a fair idea may be formed of the official value that was attached to all this inestimable work, by a single fact connected with the survey of Captain Carless. It was executed in 1838. In 1843 the steam frigate 'Memnon' was wrecked on the very coast that had been so well surveyed a few years before. It was found that the manuscript work of Captain Carless had been thrown on one side when it was sent to the Bombay office, and had never been engraved. His chart was then, after the mischief was done, ordered to be published. One other example of the spirit which animated the authorities may be given. Of course, no naturalist was allowed for the surveying ships, but it is well known what valuable geographical and geological work was done by Dr. Carter, the medical officer with Captains Sanders and Grieve, during the second survey of the Arabian coast. Yet his position as a scientific man was not recognised, and he was required to pay his own boat hire.

It is to the officers alone that the credit of the surveys is due, and an able staff continued to work on, until the officers of the Indian Navy were turned adrift in 1861. Fell completed a survey of the Coromandel Coast from Pulicat to Bimlipatam in 1851; Ward examined parts of the Burma coast between 1851 and 1859; Heathcote was engaged upon surveys in the Bay of Bengal from 1856 to 1862; Sweney continued the work on the Coromandel Coast in 1860 from Pulicat to Point Calimere; and other officers of the Indian Navy carried forward a survey of Mesopotamia, which was abruptly put a stop to by the Government in 1865, leaving it incomplete, and with much work still to be done. The survey of the west coast of India, between Bombay and Beypur, with the exception of a few detached bits, had not been revised since the old charts were drawn by McCluer, in the last century. This most important work was entrusted to Lieutenant A. D. Taylor, who received the command of an old native craft. Such was the sort of care bestowed on the surveying service by the authorities. He commenced work in 1853. The whole of Taylor's survey was admirably executed on a trigonometrical basis, and occupied six years, from 1853 to 1859. In 1860, Lieutenant Whish made a complete survey of Bombay Harbour; and, between 1857 and 1860, Captain Constable and Lieutenant Stiffe made a careful revision of the old survey of the Persian Gulf.

In 1862 the Indian Navy ceased to exist, and all the surveys were abruptly stopped, and left incomplete. The stock of charts, with the copper plates, original drawings, and sailing directions were transferred to the Admiralty; and it was suggested, but not agreed to, that the future surveys of the Indian coasts should be conducted by the Royal Navy, and at the expense of the Imperial Government. The very few surveying vessels equipped by the Admiralty had other work to do, the Treasury had no intention of paying for Indian surveys, while the Government of India entirely abandoned the duty. Large stretches of coast were still unsurveyed. Others very urgently needed revision, especially near the mouths of rivers, where there are constant alterations. At the same time, the need for accurate charts became every year more urgent. The coasting trade increased enormously, the British India Steam Navigation Company established a line running regularly round the Indian coasts, and touching at many anchorages, and new and unsurveyed ports were opened. Wrecks and disasters multiplied, while ignorance of unsurveyed shores led to heavy loss and serious delays. Yet years passed away, and nothing—absolutely nothing—was done by the Government. The great duty of providing reliable guides to the ports of India, in the shape of charts and sailing directions, was totally abandoned.

Ten years passed away. At last, in 1871, memoranda were prepared in the Geographical Department of the India Office, setting forth the disadvantages which have resulted from the discontinuance of the marine surveys, and urging the necessity of providing some efficient organizations for resuming and continuing them. These memoranda, with other documents, were forwarded to India, for the consideration of the Government in March 1871, and they were afterwards presented to Parliament. In June 1873, after a delay of two years, the Government of India requested that Captain A. D. Taylor, of the late Indian Navy, might be deputed to Calcutta, to advise them, and to give assistance in devising suitable measures for remedying the evils that had been pointed out. A better selection could not have been made. Captain Taylor had been employed, during many years, on Indian Marine Surveys, and had done admirable work in the Gulf of Cutch, and on the west coast; subsequently, preparing charts and sailing directions. He has ever since taken an ardent and hearty interest in the subject, more than once raising a warning voice touching the serious consequences of the long neglect of a great duty. Moreover, he has quite recently completed a new edition of *Horsburgh's Directory* (which was reviewed in our number for April, page 27), a most appropriate undertaking for an officer who, it may be hoped, will shortly, in some measure, take Horsburgh's place, and restore the long neglected marine surveys of India to usefulness and efficiency. Captain Taylor arrived in Calcutta on December 22nd, 1873, and has since prepared a careful and complete review of existing Indian charts, or materials for charts, and a scheme for the execution of all necessary surveys in future.

The result of Captain Taylor's searching investigation has been to convince the Government of India that in many places the charts are defective, and that even where really good charts once existed, they have, in some instances, become obsolete, through the absence of a Survey Department, whose duty it would be to ascertain and record changes effected by nature and by art.

An enumeration of a few of the *desiderata* will show what twelve years of neglect have done. Commencing from the east, in the first place a more accurate survey of the Chittagong River is needed, including an examination of the Nauf and Fenny Rivers. If the navigation of the latter had been known, the Ganges River steamers might *now* (during the S.W. monsoon, when there is too much wind and

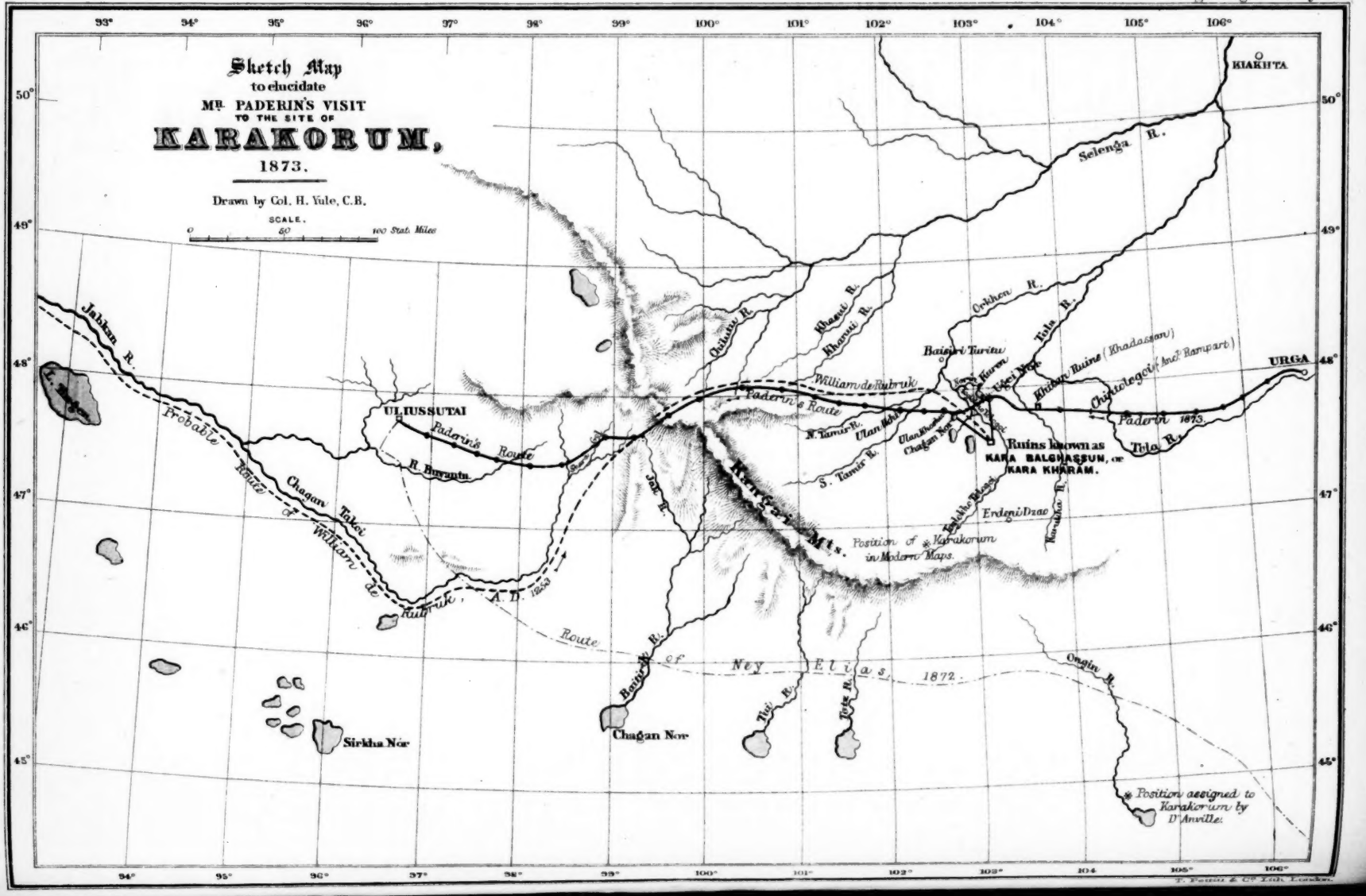
swell for small steamers to emerge into the bay and run into Chittagong) proceed to a point whither food grain could be brought from the Chittagong district. But the Fenny River mouth is unknown. Still more marvellous is it that the distance that sea-going ships can be taken up the eastern mouths of the Ganges—the Megna mouths—is equally unknown. Next comes the coast of India, from Point Palmyras to the Santapilly rocks, a distance of 270 miles, which is still unsurveyed. Coringa Bay must also be re-examined. The mid channels in Palk Strait and the Gulf of Manaar, being the approaches to the Paumben Pass, are still unsounded, and are a blank on our charts. On the west coast of India, the port of Colachull, whence the coffee of Travancore is exported (see *Ocean Highways* for February, 1873, page 352), has never been surveyed, nor has the deep water between Enciam Islet and the mainland. More soundings are needed between Beypur and Calicut; the mud banks of Alepi and Narakal should be surveyed; Cochin and Mangalore require periodical examination, as well as the shifting mouths of the Karwar River; while the great development of trade urgently calls for large scale surveys of the ports of Honore, Vingorla, Ratnagiri, Viziadrug, Jaighur, and Jinjerah. Bombay Harbour was well surveyed by Lieutenant Whish in 1861, but a revised plan is now necessary, as it has hitherto been no one's business to give notice to the Admiralty of changes in the positions of buoys and landmarks. Lieutenant Palmer, R.N., the officer in command of the iron-clad 'Mágdala,' at Bombay, is to make an elaborate survey of a portion of the bottom of the harbour, with reference to a system of defence by torpedoes; and it would be well also to examine the channels leading to and from Hog Island, and the Panwell and Tannah Rivers. Above Bombay the coast has never been properly examined, and certain portions have been neglected absolutely. The foul ground off Dáru requires immediate attention, as well as Damaon, Bulsar, and the entrances to the Surat, Broach, and Tankria Rivers. The Gulf of Cambay was surveyed by Ethersey, but the work was not completed when he was recalled in 1836; and the whole gulf now requires thorough re-examination. On the coast of Kattiwar, the great increase of the trade makes the execution of more minute plans of Baunagar, Gogo, Shalbet, Jafrabad, Diu, Dwarka, Poshatra, Seraya, Juria, and other harbours and anchorages, a very urgent need. Soundings are also required of the entrance to the Gulf of Cutch, and the principal mouths of the Indus.

Banks at the mouths of great rivers require periodical examination, as well as the bars of minor rivers; for there are constant alterations in the forms of banks, and this important service demands the continuous attention of three or four vessels round the whole coast of India. Another very important point is the connection of the land and sea surveys, which will be easy along some parts of the coast; especially that of Kattiwar, where Colonel Walker's Topographical Survey offers facilities; and on the unsurveyed coast from Point Palmyras to Bimlipatam, where Colonel Saxton has formed a line of secondary triangulation. The progress of the Great Trigonometrical and Topographical Surveys renders this connection easy of attainment, and will be a great advantage, by making both land and sea surveys more serviceable and complete.

With reference to the great and growing importance of the mercantile marine, and especially of the coasting trade, the Government of India are ready to accept the responsibility of completing and maintaining the charts of the Indian coast-line from the Pakchan estuary, at the southern extremity of Tenasserim, to Sonmiani Bay on the western limit of Sind; including the Andaman, Nicobar, and Laccadive Islands, and the Mergui Archipelago. But the surveys of the Persian Gulf and Straits of Malacca, of the Arabian coasts and Red Sea, must be looked for from the Admiralty, and must be executed at Imperial expense. When the old East India Company had a monopoly of the trade from Mocha to China, the provision of charts for all the coasts over that vast area became a part of their obvious duty. But such responsibilities no longer appertain to the present Government, which is only bound to provide for the safe guidance of vessels along the coasts, and into the ports of British India.

It is proposed that the new system for the provision of accurate charts shall be controlled by a superintendent of marine surveys, to reside in India, who will regulate the proceedings of surveying vessels, supervise the plotting and the reproduction of charts by photozincography, maintain a correct record of buoys and lights, and transmit the earliest information of any changes. The officer recommended to fill this important and responsible post is Captain Taylor, than whom no man living has a more intimate acquaintance with Indian marine surveys, or takes a deeper interest in their efficiency. The charts will finally be printed and published in England by the hydrographer to the Admiralty. The surveying flotilla will, it is proposed, consist of five sailing vessels, which can be provided from those already in the marine service at Bombay and Calcutta; and each will be supplied with a steam pinnace; and there will be one fair-sized steam tender. The sailing vessels will generally be at anchor, and will be used as marks for the steam pinnaces, while they are away surveying. It will be a very difficult matter to find a sufficient staff of surveyors in the present depressed condition of the surveying service in the Royal Navy, for no young officers are now trained for this important work, and when a vacancy occurs, even in the most responsible posts, it is no easy matter to fill it up. Probably it will be found necessary to train some of the younger officers to surveying work. One very important part of the complement of officers in a surveying vessel, which is so utterly neglected by the Admiralty, will not, it is hoped, be overlooked in India. No one who is acquainted with the work of Dr. Carter, can doubt the advisability of appointing to every surveying vessel, a medical officer who is also a naturalist, and who is possessed of general scientific taste and acquirements. The opportunities offered, during service in a surveying vessel, for observing and collecting, are so exceptional, that it would be shameful to neglect them.

It is hoped that the work may be commenced, in the end of the present year, with the unsurveyed portion of the coast between Point Palmyras and Bimlipatam, and perhaps also the Megna mouths of the Ganges; and the surveys will be carried on in communication with Colonel Thuillier, the Surveyor-General, and will be connected, wherever it is possible, with the points of the Great Trigonometrical Survey.


Sketch Map
to elucidate
Mr. PADERIN'S VISIT
TO THE SITE OF
KARAKORUM,
1873.
Drawn by Col. H. Yule, C.B.
SCALE.
0 50 100 Stat. Miles
KIAKHTA
Selenga R.
Orkhon R.
Tola R.
Khanui R.
Kherlen R.
Onduzu R.
Baisiri Turitu
Khirisu Ruine (Khadassan)
Chintategei (Ind. Rampart)
URGA
William de Rubruk
Padorin's Route
Padorin 1873.
Tola R.
N. Tamir R.
S. Tamir R.
Ulan Modo
Ruins known as
KARA BALGHASSUN, or
KARA KHARAM.
Erdeni Dzao
Karakorum Mts.
Position of Karakorum in Modern Maps.
Jaksan R.
Jabkan R.
L. Baikal
Probable Route of William de Rubruk, A.D. 1253
Chagan Tukei
Uliussutai
Padorin's Route
R. Buranta
Route of Ney Elias, 1872.
Baian R.
Chagan Nor
Tui R.
Tola R.
Ongin R.
Sirkha Nor
* Position assigned to Karakorum by D'Anville.
T. Foster & Co. Ltd. London.

The completion of the marine surveys is now considered, by the Government of India, to be a work of pressing necessity; and thus they will once more be restored to efficiency, and due provision will be made for the safety of the vast and increasing mercantile fleet which visits the ports of India every year, and is constantly navigating along its coasts.

VISIT OF MR. F. PADERIN TO THE SITE OF KARAKORUM.

IN the *Geographical Magazine* for May (p. 47) reference was made to this reported visit, and expression was given to the present writer's disappointment at having seen no account of it. Since that was published, Madame Fedchenko has most kindly sent me a rough translation of the account published in the *Bulletin of the Imperial Geographical Soc. of St. Petersburg* (vol. ix., No. 10, 1873); and as other readers, probably, of the *Geographical Magazine* may be interested in the subject, I now send an abstract of the paper, with such remarks as suggest themselves.

The account is contained in a letter from Mr. Paderin to A. E. Vlangali, dated Uliussutai, July 20th, 1873. The visit to the site was made during a journey from Urga to Uliussutai. And we had better say at once that the site visited, and which Mr. Paderin, with apparent good reason, identifies with Karakorum, is the place called in D'Anville's map Talarho Hara Palhassoun (*i.e.* Kara Balghassun), and is precisely that which Abel Rémusat, fifty years ago, pointed out* as in all probability the representative of Karakorum, standing, according to the Jesuit tables, in 47° 32′ 24″ N. latitude, and in longitude 13° 21′ 30″ west of Pekin.

The first thing that meets one on taking up the elucidation of this account is a puzzle. All the modern maps at hand, except that in M. Pauthier's Marco Polo, indicate as the site of Karakorum a position more than three quarters of a degree further south than this pointed out by Rémusat, and so much nearer the sources of the Orkhon River. Indeed, in the map by Mr. K. Johnston, junior, attached to the report of Mr. Ney Elias's Journey in Mongolia, in the new volume (xliii.) of the *J. R. G. S.*, this site is marked as Rémusat's Karakorum. What is the origin of this indication? Rémusat's it surely is not.

Mr. Paderin unfortunately made no observation, and is stated by the editor of the *Bulletin* merely to have represented his route on a small sketch without scale, and in the itinerary which we give below.† We are, therefore, still dependent for the approximate position of the ruins upon the Jesuits and their copyists, *i.e.*, I believe, all who have mapped this tract, unvisited since their day, down to the present time. I have tried to lay down Mr. Paderin's itinerary in the accompanying sketch map, based on Mr. Keith Johnston's map above mentioned, and then modified in the rough, where such modification seemed absolutely demanded by the terms of the itinerary.*

Mr. Paderin states that his route from Urga to Uliussutai bore nearly due west throughout, deviating to south-west only at the commencement. It led him across the rivers Tola, Karukha (Karoa Pira of D'Anville), the two Tamirs, and the Chilutu, then crossed the pass over the watershed which divides the basin of the Selenga from that of the Dzungarian lakes. On descending from this pass he soon fell into the Chinese official track to Uliussutai.

His attention was especially directed to the identification of the site of Karakorum. He cites as aids to this determination, in addition to the data collected in Rémusat's paper, and in Ritter, the journey of the Taos-se Doctor Khieu, surnamed Chang-Chun, who, in the year 1222, travelled from North China to Tokharistan, on the summons of the great Chinghiz, passing by Karakorum or its immediate vicinity, and the itinerary of another Chinese traveller whose name the Russian writes as Chjan-de-Khoi, and which appears to afford important data on the subject in hand.†

Among these data are the following: (1) That Khorin (Holin) or Karakorum, is more than 100 *li* to the south-west of the lake Ugei-Nor; this being a lake of clear water about 70 *li* in circuit. (2) That Holin stands in a valley which has a circumference of 100 *li*, surrounded by hills, and the river Khorin running through the middle of it. (3) That in going from Holin to the river Tamir the traveller passes a hill called "Horse's Head" (in Chinese Ma-tu, in Mongol Morin-tologoi), and another called "Red-Ear" (in Chinese Khun-er, in Mongol Ulan-chihi). (4) That to the north of Holin or Khorin there was a palace near a lake called Tsagan-Gegen.

It was not to be expected that important remains should be found belonging to the time of Chinghiz and the early khans; for the place was re-established and occupied by their descendants after their expulsion from China in 1368,‡ besides having been

* *Mém de l'Acad R. des Inscript*, tom. vii. (1824), pp. 253, 289.

† Itinerary.

		Versts.
1	Urga to Nighthalt W.	25
2	,, ,, S.W.	25
3	,, ,, S.W.	27
4	,, ,, W.	36
5	,, ,, W.	37
6	,, ,, W.	30
7	Crosses R. Tola to Chin-tologoi	17
8	Khadassan	28
9	Crosses R. Kharukha	32
10	,, ,,	30
11	Lake Ugei-nor	42
12	Crosses R. Orkhon	25
13	,, W.N.W.	23
14	Crosses South Tamir	16
15	Ulan Ikhi on left bank of N. Tamir	26
16	On left bank of Tamirat	23
17	Near Kuren	20
18	On R. Khanui	40
19	On affluent of R. Chilutu	34
20	On R. Chilutu	45
21	Near the Pass (over the watershed)	33
22	On R. Jak...	26
23	On R. Shara-ussu	35
24	,, ,,	24
25	,, ,,	23
26	,, ,,	26
27	On R. Buyantu	29
28	W.N.W. ,,	23
29	,, ,,	18
30	(Kuren)	28
31	Uliussutai...	18
		*864

* 864 versts = to about 576 miles.

* I have also had before me Petermann's map of W. Mongolia, based on Veniukoff (*Mittheil.*, 1872, No. ix). There is a curious error in this map; accidental, I presume. This is the misplacement by 1° of latitude of the place (a famous monastery) called, in D'Anville's map, Erdeni tchao. A chance reference in Mr. Paderin's letter shows Erdeni tchao as 2½ stages *south* of Kara Balghassun, *i.e.* corroborates D'Anville.

† Mr. Paderin quotes Chang-chun from a Russian version by the Archimandrite Palladius, in the *Transactions of the Russian Mission at Peking*, vol. iv; but this is more accessible in a French version by the late M. Pauthier (in *Journal Asiatique*, s. vi., tom. ix.

The itinerary or journal of Chjan-de-Khoi is quite unknown to me. It has been translated into Russian by the same learned churchman in the publication of the Siberian Section of the Imperial Geographical Society. I beg to draw the attention of Mr. Delmar Morgan, or some other Russian scholar, to this paper, as probably well worthy of translation.

‡ The Emperor Shunti or Togon-Temur when expelled from Peking in 1368, established himself at a town which he called Bars Khotan ("Tiger Town"), on the Kerulan River, and died in 1370. His son, Ayurshiri Dala, transferred his residence to Holin or Karakorum (*Timkowski's Travels*, ii., 208).

exposed to destructive vicissitudes, so that nothing could reasonably be looked for, but the determination of the site from geographical and topographical data, and perhaps remains of stone ramparts.

Mr. Paderin, during his stay at Urga, had been able to get satisfactory assurance that the names Kara-Balghassun, Ugei-Nor, Morin-tologoi, Ulan-chihi, and Tamir, were all yet extant.

Near his seventh station, Chin-tologoi, there is the trace of a quadrangular rampart, grass-grown, and without other visible remains. This is pointed out by the Mongols as a work of vast antiquity.

On the ninth day's march, between Khadassan and the river Karukha, there is also a group of ruins called Khityin Khărăm, or the "Monastery Inclosure," which has been ascribed by Chinese writers to the Khitans. The Mongols could say nothing about it. The rampart is of earth, about 6 feet in height. The buildings are lofty, with no roofs remaining; the walls of stone, chiefly black flags, laid in a very solid manner, and cemented with loam having a small mixture of lime.

The 11th of March brought the traveller to the Ugei-Nor. This lake, about 8 miles from east to west, and a little less from north to south, lies towards the north side of a wide valley enclosed by low hills. The valley is called Toglokho Tologoi; it is some 45 to 55 miles in length from east to west, and 25 to 35 miles in breadth. The Orkhon River, fordable stirrup-deep, traverses the valley, and the lake discharges into it by a stream called Narin. The ground near the river is swampy, and west of it there is a series of saline lakes called Tsagan-Nor (White Lakes). Some willows and poplars grow on the banks of the river.

The hills forming the western boundary of the valley are called Ulintu, Obotu, and Ulan Khoshu. On the south and south-east are the Khadamtu Hills, sprinkled with clumps of trees having leaves like pines. The hills on the east and north are insignificant, only one having a name, viz., Khityin-Khada, "Monastery Hill." This is so called from a *kuren* or fortified enclosure at the north-west end of the lake Ugei-Nor containing a Buddhist temple, the residence of the Khutuktu Orombyin Gegen. This little *kuren* is of remarkable construction, and looks as if it might have been the palace of a khan in days of yore. The basement of the temple, both in materials and in style, resembles the ruins near the river Karukha mentioned above.

Mr. Paderin diverged from the post track at Ugei-Nor station to visit the ruins of Kara Khărăm or Kara Balghassun (for it is known by both names), and rejoined the track at the next station westward, called Ulan-Khoshu.

Four hours' smart riding, estimated at 35 to 40 miles, brought him to the ruins, lying in the same valley,* and some 4 or 5 miles from the west bank of the Orkhon, with a fine grassy plain intervening, which, in places, rises into frequent hillocks. The remains consist of a rampart enclosing a quadrangular area of about 500 paces to the side, and still retaining traces of indented battlements. The rampart is of mud, and in some places apparently of sun-dried brick. Inside the area, on the eastern side, is a tower or mound rising above the wall; the general height of the latter being about 9 feet. There are traces of a small inner rampart running parallel to the north and south sides of the square. Besides these there were to be seen no monuments or relics of antiquity.

Mongol traditions, Mr. Paderin observes, rarely preserve any memory of ancient times. They do not in general go beyond a vague statement that such a spot contains the bones or the treasure of Gesser Khan (as is commonly said of the tumuli scattered over the southern Kalkha country); or that such another is the relic of a fine monastery, or of the palace of Chinghiz Khan. Of this place, the Mongols, with Mr. Paderin, could only say that it was very old, and that probably Chinghiz Khan had lived there; but one sharp Lama came forward saying it was the city of Togon Temur Khan. Now it is a fact (already alluded to) that at least the son of this last of the Chinghizide emperors, did, shortly after their expulsion from Cambaluc, establish himself at Karakorum.

But the dimensions, distances, geographical position, and aspect correspond with the old data. Thus the place does lie southward of the Ugei-Nor from 100 to 120 *li*;* the traveller leaving it for the westward does cross a river (indeed two rivers) called Tamir, and on his way to that river does pass hills called Horse's Head and Red Ear. It answers all the looser conditions collected by Abel-Rémusat (see *Ocean Highways* for July, 1873, p. 170); the most definite tradition met with by Mr. Paderin connected it with Togon-Temur Khan; and the place is still known as Kara Balghassun (Black Town) and Kara Khărăm† (Black Rampart), both which seem to involve memories of the ancient and proper name.

Mr. Paderin supposes the old name Karakorum to have been merely a corruption of Kara Khărăm with the meaning just given.‡ But the Archimandrite Palladius, probably the best authority, in a short appended note, does not assent to this, observing that in the transcription of the Mongol text of the biography of Ogodai Khan the name of the city is rendered Khara Khorum,§ whilst the Chinese authors of the Mongol period are unanimous that the chief *ordu* of the Mongol khans got its name from the nearest river.‖ On the other hand, Kara Khărăm, or Black Rampart, is evidently applicable, in that form, only to the deserted site.

Though the character, as well as the site, of the

* The original translation says "nearly in the south-east end of the valley." This is a little difficult to reconcile with the other indications, including the Chinese notices and the Jesuit map. But in another passage also the traveller says he rode from Ugei-Nor to the ruins nearly south-south-east, so I have tried to accommodate the sketch map to this.

* The Chinese traveller quoted by Mr. Paderin says south-west indeed, whilst *he* says south-south-east, as we have already noted.

† The transcription from the Russian is Kherem. But I presume that, as often in French spelling, the *e* here represents the neutral vowel—the short *a* in America.

‡ A similar suggestion is made by Mr. Ney Elias, *J.R.G.S.*, xliii., p. 122.

§ As in the Western Asiatic writers, *e.g.*, Rashiduddin and Ibn Batuta.

‖ See *Ocean Highways*, as quoted above. My remarks there are thus corroborated. But I have found a passage which may be the origin of Mr. Grant and Sir H. Rawlinson's association of the name of Karakorum with mountains. D'Ohsson cites from Rashiduddin a passage which speaks of "the great Altai and the Karakorum Mountains." And M. d'Avezac, just after quoting this, assumes that the town was called so from being at the foot of the Karakorum Mountains. (*Rél. de Voyages, &c.*, tom. iv., pp. 518, 519.)

remaining rampart appears to correspond with that of ancient Karakorum ("about a quarter to one-third of a mile square, enclosed by a mud rampart" *), it is not to be supposed that this existing wall, with still surviving traces of battlements in sun-dried brick, can be the work of Chinghiz, or Ogodai, his son. It is, *at earliest*, the work of the son of Togontemur (1370-1378), and, perhaps, may be later still. For, during the Ming dynasty (1368-1644), the Chinese had less power over, and fewer dealings with, the nations beyond the wall than at almost any other period, and hence less knowledge of their history; so that it has been observed that, "one sees with surprise that the recorded history of the Hiongnu, at the time of the Han dynasty, before the birth of Christ, is much better digested, and appears infinitely richer in events than the later history of the Mongols, from their being driven out of China down to the first half of the seventeenth century." † The history of this period is likewise meagre and confused in the hands of Sanang Setzen, the Mongol prince, but in his book we find three brief allusions to Karakorum.

In 1399 the fourth of the successors of Togon-Temur, called by Sanang Setzen, Elbek Khan, was put to death by Ugetchi Khashagha of the Kirghiz, claiming the headship of the great confederacy of the Oirad, and this chief at the same time reduced the Mongols to subjection, a subjection which lasted many years. Elbek Khan's chief wife passed into the conqueror's tents, and three months afterwards bore a son, called Adsai, whom the Kirghiz chief brought up as his own. At the same time a great Mongol chief, Batula Chingsang, had captured a prince of the Assod, made him a slave, and set him to gather dry *argols* on the steppe. One day there had been a great Diet of the Oirad, and as some of the members rode home from it, they came upon Aroktai ("the Basket-man"), as the slave prince was scornfully called, toiling at his usual occupation. As they passed he called to them and asked what business had been done in the Diet that day. One of them answered jeeringly—"It has been resolved *to build anew the city of Khorum-Khan*, to put Prince Adsai on the throne of the Khans, and make the lad Aroktai a prince." When they had passed on, the slave threw away his basket and said—"Those were no words of thine; they are the decrees of God," ‡ &c.

At a much later date (1552), we are told that Altan Khan subdued the four Oirad, "the seizers of Honing.§ And a nephew, addressing the same prince some years later (1576), is made to say—"Thou hast avenged thyself on the Chinese, the conquerors of thy capital, and by binding the Chinese people to thy policy, has made them thy dependants; thou hast also avenged thyself on the Oirad, the conquerors of Honing, subdued their people, and brought them under thy rule."

There seems to be no doubt that Khorum-Khan in the first extract (preserving a part of the old name), and Honing in the other two (a reflection from the Chinese Holin) both stand for Karakorum. We see from the first passage (if it be historical), that in 1399 the city was abandoned, perhaps, however, only through the recent conquest by the Oirad. We do not see in the other allusions any positive intimation of its occupation at a later date, but neither is there anything absolutely inconsistent with that possibility, and we may even say that the double allusion to the Oirad as the conquerors of the city, seems likely to bear reference to events that were not a century and a half gone by.

H. YULE.

* *Ocean Highways* for July, 1873, p. 170.
† Schmidt (Sanang Setzen), p. 402.
‡ Schmidt, p. 145-147.
§ Ibid, p. 216.

THE KASHGAR MISSION.

THE progress of the Mission up to their arrival at Kashgar, has been noticed in previous numbers. We have now been favoured with the following notes, written by Lieutenant-Colonel T. E. Gordon and Captain Biddulph on the subsequent doings of the party, which include visits to the Chatir Kul Lake and Maralbaski, and the crossing of the Pamir plateau. Lieut.-Colonel Gordon writes as follows, under date of January last:—

"Dr. Stoliczka, Captain Trotter, and I left Yangi-shahr-Kashgar, on the last day of the old year. Having been asked to take as little baggage as possible, the local authorities undertaking to provide us with lodging and food, the party started with the limited following of six servants and six baggage ponies. The first day's journey was to Besakh (26 miles), a village in Upper Artush, where quarters were found for us in the house of a Kirghiz Bai (Beg-Patriarch.) The road lay in a northerly direction, round the east side of the city of Kashgar, then through about 3 miles of cultivation to a stony desert rising gently towards a dip in the low range of hills which shuts in the valley of the Artush, a broad and far extending fertile plain, studded with villages showing signs of thriving population and careful farming. This well irrigated valley, watered by never failing streams flowing from the Tian-Shan and Alai Mountains, must produce wonderfully rich and regular harvests. Two large camel caravans were passed going from Almati to Kashgar with Russian goods, of which iron cooking-pots formed a considerable portion.

"*January 1st*, 1874. — Proceeded in a general N.N.W. direction, 3 miles over part of the Artush Valley to the mouth of the Tagun Valley, up which the road led to the Khatai, also called (Tessiktash*) Kurawal (9 miles), a small square fort used as a customs post, and occupied by a few of the Kashgar Dadkhwah's men. This was the most advanced post of any description held by the Chinese during their occupation of Kashgaria. We halted for the night at Chung Terek (the big poplars), also called Ak-chirgh (the white reeds), 20 miles, a Kirghiz village of mud huts and felt tents. We were accommodated in a small smoke-stained "Akai," and had the usual "Ash," for a meal. Kirghiz are scattered over the whole valley in small "Akai" (hamlets), located wherever grazing is available for their herds and flocks. Most of the hamlets show signs of settled habitation in patches of cultivated and irrigated ground, probably attended to by the elders of the families when the summer move to high pasture lands takes place. The scenery at Chung Terek must be singularly beautiful in summer.

* Post.

"*January 2nd.*—Proceeded to Chakmák, 21 miles up the Tayun Valley. The frozen Tayun was crossed and recrossed repeatedly, as on the previous day. The hills close in a short distance above Chung Terek, and at a commanding spot 12 miles beyond the Mirza (also called Terek and Post) Fort is placed. It stands on the left bank of the stream, close under a high, steep hill, surmounted by two circular redoubts. Its front is covered by similar works, built on strong positions, entirely commanding the approach, as well as two ravines, by which a desperate attempt might be made to turn them, by climbing rugged heights extremely difficult of ascent. An extended curtain (parapet loopholed wall) runs for about 400 yards up the bank of the stream, connecting the main fort with a smaller one under a height, occupied by a circular outwork, which conceals the line of parapet and secures it against enfilade fire. This work would enable the defenders to pour a tremendous flanking fire on assailants forcing a passage down the bed of the stream. The fort appears to hold accommodation for some 200 or 300 men. At present it is occupied by a small guard only. We were met here by Yuzbashi Alumkul, a Kohistanee Kipchak, sent from Chakmák to meet us. The "dastarkhwan" provided was of the old familiar style, and was most welcome to us after the previous two days' most ordinary and almost scanty fare. The valley opens out again above the Mirza Fort, but to no great extent. It affords good grazing ground to Kirghiz, scattered all over it in tent clumps. Nine miles higher up is the Chakmák Fort standing on a small open slope on the right bank of the Tayun, where it makes a sharp bend round a lofty perpendicular hill. The position occupied by the fort is walled in, and concealed by stupendous and all but inaccessible rocky mountains. The approach on both sides (front and rear) is by the narrow defile through which the Tayun flows. The fort and houses in its rear must give accommodation for a large garrison. A work high up on the left affords an effective flank defence. Three lines of fortifications, built on high, strong positions (those in front commanded from the rear), protect the approach to the defile and fort.* The precipitous rocks that tower over all, while perfectly inaccessible to assailants from the front, are capable of ascent from the rear by defenders, so that the outworks, if carried, could not be held by a fire thus opened on them from above. To all these sources of strength may be added the very important one that the position admits of attack on one point only, and that is commanded by works giving both direct and cross fire. The place is one of remarkable strength, its natural powers having been greatly increased by skilfully placed works and well selected defensive lines. The fort is said to have been built four years ago by Akula Beg, the eldest son of the Amîr. Stone and mud form the building material. It has a garrison of about 200 men. The gun-shed contained four guns (two howitzers and two long pieces of small calibre) on wheeled carriages. No other artillery was seen. 500 good soldiers under a determined leader could hold the place against a vastly superior force. Mahmood Beg, Toksabai (chief of the standard), in command, welcomed us warmly, and treated us most hospitably, accommodating and entertaining us in excellent quarters inside the fort.

"*January 3rd.*—Continued in the same general direction, passing the Suyuk Kurawal, 8 miles up the Tayun, where it is joined by the Suyuk stream, flowing south-east from the Suyuk Pass, distant about two days' journey, and said to be impracticable for horses in winter. The Kurawal is held by a small guard. The valley opens out a few miles above Chakmák, and near Suyuk the hills become rounded and low. We proceeded up the Tayun almost due north from Suyuk, and halted at Goobja Bashi* (the Ovis Poli ground), also called Bulghum Bashi (the Myricaria wood), a sheltered valley with abundant pasturage. We were accommodated in a capital "Akai," sent by the "Toksabai." Our accompanying party of Kashgar officials, of whom the Meerakhor Inam Khaja is the principal, was joined at Chakmák by the Yuzbashis, Muhammad Alim and Alum Kul, and by the Kirghiz Yuzbashi, Muhammad Saleh, with ten of his men. Muhammad Saleh is an Andijani Kirghiz, with 100 Chirik, Alai, and Andijani Kirghiz under him, performing military service in the Chakmák command. I was told that the Amîr employs Kirghiz to a considerable extent in the frontier commands.

"*January 4th.*—To Torugat Bela (the brown horse's back), 16 miles, a grassy plain 13 miles from the Torugat Pass. At about 5 miles the road passes through an old crater, which was pointed out by Dr. Stoliczka as verifying his previously expressed opinion as to the existence of an old volcano in this direction. On leaving the road and wandering over the grass-covered undulating hills and long sloping flats to the west, we saw several flocks of Ovis Poli, the coveted game of Indian hill-sportsmen, but were not fortunate enough to secure any. The Torgurat Bela ground was occupied by Kara Kirghiz and Kazaks from Nayrn with great droves of ponies, but they were moved to a valley in the neigbourhood to make way for us. We saw about 800 of their horses being driven off as we reached camp.

"*January 5th.*—Halt. The Ovis Poli ground was visited. Large flocks were seen, but none were bagged by us. We went about 12 miles to the west, passing along extensive valleys and over flat-topped spurs and rounded hills all covered with grass—good riding ground. The country to the east of the pass appears of the same character.† The pasture, even now in the depth of winter, is excellent, dry but nutritious, as shown by the condition of the ponies which feed entirely on it. In summer it must be very rich and abundant. We can now form some idea of the nature and pasture of the Pamir Steppes. We were told in the evening by the Meerakhor Inam Khoja that the arrangements would only admit of another day's stay here before returning to Chakmák, and we were offered the choice of a successful day after Ovis Poli on new undisturbed ground to the east, or a visit to the Chatir Kul (Sheet Lake) by riding there and back. We decided on the latter, hoping to have other opportunities of Gulja (Ovis Poli) sport. On our way back to camp the Kirghiz were despatched in several

* The fort extends right across the open space to the edge of the stream, and sweeps with its fire the whole of the inner approach.

* Ten miles from Chakmák.

† Laden animals can pass from Torugat Bela to the foot of the Terek Pass, 25 or 30 miles to the east by path over the pasture grounds.

directions, and brought in two fine male and one female Ovis Poli.

"*January 6th.*—Rode to Chatir Kul and back, 32 miles. Crossed the pass, 13 miles, and passed on to a ridge 3 miles beyond, from which a splendid view of the lake, plateau, and surrounding mountains was obtained. The day, fortunately, was remarkably clear. There was no snow on the southern side, and very little on the northern side of the pass. The lake was entirely frozen over and thinly covered with snow. A considerable amount of snow lay on the Tash-Robat range and the mountains to the west. The Tash-Robat Pass, leading to Naryn (three days' march from Chatir Kul) was, however, perfectly open, as we met four or five travellers who had crossed the previous day, and halted for the night at Chatir Kul. Several small parties of Kazaks and Kara Kirghiz were seen on the Torugat Pass attending their ponies grazing on the slopes. The Kirghiz Yuzbashi who accompanied us, appeared to be on the best terms possible with them all. We were told that the Naryn Kazaks and Kara Kirghiz come over annually with about 5000 ponies for winter pasture in the Amîr's territories, paying revenue to His Highness. The ponies are stout and well made. Both they and the men look enduring and active, and they must be hardy to a degree to stand as they do the cold of these heights. In the sheltered Torugat Bela ground the thermometer last night sank to 26° below zero outside and 8½° below zero inside our "Akai." The wind at this season on the heights is cutting in the extreme. Of this one of our party had very uncomfortable proof on the 4th, when in his intense eagerness to be the envied 'first' to bag an Ovis Poli, he undertook a long 'stalk' round the summit of a ridge about 14,000 feet high, and was frost bitten in two fingers from contact with the rifle barrel before he got a shot. The Kashgar officials assert that the Tash-Robat range (the crest of the Tian-Shan) is the boundary between the Russian and Kashgar territories. Ihrar Khan Tora told me this the day I left Kashgar, and Syud Yakoob Khan Tora appears to have spoken in Calcutta of the Naryn stream being the boundary. Russian accounts, however, speak of the Chatir Kul as 'on the borders of Russia and Eastern Turkistan,' and even make mention of the frontier line 'along the southern spurs of the Celestial Mountains.' From what we heard on the spot we are inclined to believe that practically the Torugat Pass range is the boundary, *i.e.*, the southern spurs of the Tian-Shan. In the whole way from Kashgar there is literally no 'hill ascent' till within a few hundred yards of the summit of the pass, and there it is easy and gradual. The road is well adapted for the passage of an army at all seasons of the year. There is nothing to prevent field-guns and waggons traversing it beyond the slight obstacles that are to be met with in many country roads, and which, with the aid of sappers and labourers, can be easily and quickly removed or remedied. Grass is to be got throughout, being particularly abundant between Chakmák and the pass. There is no scarcity of firewood to within 25 miles of the pass, and then a good substitute is always obtainable in the stunted furze and dry horse-droppings to be found in the water-courses and on the pasture grounds. Baron Kaulbars in his description of the road makes a strange error in saying that for 67 miles from Chatir Kul towards Kashgar no fodder is procurable.

"*January 7th.*—Returned to the Chakmák Fort, 26 miles. On the way we saw Kirghiz loading camels with large blocks of ice cut in the Tayun for transport up a side valley, where they were located with their flocks, their supply of water being thus obtained till the approach of warm weather releases the frost-bound springs.

"*January 8th.*—Halted at Chakmák to make arrangements for a journey across to the Terek Forts on the other road—to the east, from Kashgar to Naryn and Almati *viâ* Artush—the Terek Pass on the southern slope, and the Terekty Pass on the main crest (east of the Tash-Robat Pass) of the Tian-Shan. There is a road of communication between the Chakmák and Terek Forts, about 25 miles, with a small fort half way. Mention was made of a small fort among the hills to the west, between Chakmák and the Mirza Kurgan, held by Kirghiz. A road branches off about half way between Chung Terek and the Khatai Kurawal (17 miles or so from the Mirza Fort), and communicates with the forts on the Kashgar-Khokan road. We could not induce the Chakmák Toksabai to arrange for our visit to Tora Khoja's command. Tora Khoja is the Toksabai of the forts on the other road and pass leading to Naryn and Almati. We were told that no instructions had been received from Kashgar, and that it would be necessary to return there for further permission to visit Terek or other places. We were shown at Chakmák the frozen carcases of about 50 Ovis Poli and Ibex, stored for the winter meat supply. The Toksabai presented us with nine splendid male specimens. All had been shot by the Kirghiz troops, who, judging from what we saw of the party that accompanied us, must form very valuable auxiliaries in mountain warfare in these regions. Mounted on powerful and active ponies, peculiarly well adapted by natural training to continued hard work and great exposure, these Kirghiz, equally accustomed to a rough life, are admirably fitted for 'scouting' and mounted infantry purposes. They are armed with rifled matchlocks, which they use most effectively, and manage to load wonderfully quick.

"*January 9th.*—Proceeded to Chung Terek, 21 miles, on our way back to Kashgar.

"*January 10th.*—To Kairak, 25 miles, a large village in the Artush Valley.

"*January 11th.*—To Kashgar, Yangi-shahr, 21 miles. Notwithstanding the intensity of the cold during the trip, Captain Trotter, R.E., succeeded in making a complete route survey of the road, checking it by astronomical observations. He also took hypsometrical observations for the heights. Dr. Stoliczka took the fullest advantage of all the opportunities afforded for geological research and examination, the results of which he has recorded. I made a few sketches. We were invariably well received by the soldiers and others whom we met during the journey, always getting a ready salutation of friendly respect from all. I have alluded to the Terek Pass, on the road between Kashgar and Naryn-Almati. The pass of that name has long been known to geographers as leading towards Khokan. We found 'Terek' to be a name in common use in the direction we travelled. On the road to Chatir Kul we passed Kichak Terek, Chung Terek, and Terek Kurgan, and were told by all from whom we enquired, that the forts on the other road from Kashgar to Almati are called Terek, also that

the pass leading over the southern crest of the Tian-Shan is similarly named. Baron Osten-Sacken, in his account of the Trans-Naryn country, speaks of the 'Terek,' a tributary of the Naryn stream. As thus applied in naming places, silver or white poplar is evidently the meaning of the word, which has also other significations. There are small poplars at Kichak (little) Terek, and large ones at Chung (big) Terek, and that tree is the most common one in the Tayun Valley. Baron Osten-Sacken mentions the banks of the Terek being 'wooded with poplar.' The tree is probably common towards the Terek Forts and on the Khokan road. I go into these particulars with reference to a question raised in a discussion on Central Asian geography, given in the Royal Geographical Society's *Proceedings*, dated 25th of April, 1870, as to the existence of a Terek Pass north of Kashgar, as well as one to the west.

"KASHGAR, *24th January*, 1874."

Letters have been received detailing the subsequent progress of the Mission; but as we cannot give these *in extenso*, we must furnish our readers with the following extracts. Captain Biddulph writes as follows respecting his trip to Maralbashee:—

"KASHGAR, *4th February*, 1874.

"The Amîr's permission for, my going to Maralbashee having been obtained, I left Yangi Shahr on 31st December, 1873, Mirza Suffee Punjabashee being deputed by the Amir to accompany me.

"Travelling easily, I reached Malabashee in seven marches. The road runs for the entire distance along the course of the Kashgar River, or Kizil Su, which it crosses about 60 miles from Yangi Shahr. For the first 40 miles the country is well cultivated, and there is no want of population; the town of Fyzabad, which gives its name to a flourishing district, being reached at 35 miles' distance from Kashgar.

"At a little more than half-way from Yangi Shahr to Fyzabad, the road crosses three considerable streams flowing from the south into the Kizil River. Their names were given me as the Derbuchek, the Chokanah, and the Fyzabad, and I was told that they are all united into one stream, called the Yamanyar, at no great distance above where I crossed them. Beyond Fyzabad, habitations become scarcer, and cease altogether at Yangi Awat, 46 miles from Kashgar. From here the country is covered with low bush-jungle and sand-hills, gradually changing to forest, which becomes continuous shortly after crossing the Kizil Su to within 4 miles of Maralbashee. No habitations are met with during the whole of this distance, except posthouses, at intervals of about 15 miles, which are erected for the use of travellers. These are all of inferior construction, with small accommodation, one of them only consisting of a single room. As I took no tents with me, I used the post-houses during the whole time of my absence from Yangi Shahr. The forest, though apparently of great extent, contains no fine timber, the only tree being the poplar *(Tograk)*, of stunted growth; the under-growth consisting of a bush, growing to a height of about 8 feet, a thorny bramble, and camel thorn, but there is no grass; the soil is very dry, alluvial, and covered with a thin hard crust of soda, which crackles under the foot at every step, and in which horses sink up to the fetlocks. The forest abounds with gazelles *(Antilope gutturosa)* and hares, but, with these exceptions, is singularly wanting in animal life. For a space of about three-quarters of a mile on each side of the river there are no trees, but in their stead a belt of thick high grass, like what is known in Indian jungles as hurkut, growing to a height of from 8 to 12 feet. In this are tigers, wolves, the large deer, called by the natives 'Bugha' or 'Maral' (apparently *Cervus elephas*), gazelles, foxes, and pheasants. This treeless belt is doubtless caused by periodical changes of the river bed, of which there are many evidences; the fall of the country to the eastward being only a little over 500 feet in 100 miles, according to aneroid readings, which I took daily, the river making frequent turns and windings, and being level with its banks, so that a very slight flush of water would cause an overflow—the current not being rapid enough to prevent its freezing sufficiently to admit of loaded carts crossing it with ease. In summer it is crossed by a bridge, which, however, I did not see, as the road I followed, both in coming and going, is more direct, thereby saving several miles, and is always used in winter. Within 4 miles of Maralbashee the forest ceases, and the country is covered with long grass, with occasional patches of scrub and swamp, much resembling the Rohilcund Terai. In this are dotted about small villages, with patches of cultivation round them. The grass jungle extends over a great extent of country, as well as I could gather, both to the north-east, south-west, and eastward, being, doubtless, formed by overflows and changes of course of the Kizil and Yarkand Rivers. The latter river, I was informed, flows close to Aksakmaral, which is about 32 miles south-west of Maralbashee.

"Maralbashee, or Burchuk, as it is sometimes called, contains about 1500 inhabitants, and is at the junction of the road from Yarkand with the Kashgar and Aksu road. It contains a fort and small garrison of about 200 men; it could, however, from its position, be easily and quickly reinforced, either from Aksu, Kashgar, or Yarkand, if necessary. The river Kizil flows under the walls of the fort, and, during the late rebellion against the Chinese, was made use of by being dammed up and turned on to the fort to break down the wall. Where I crossed it on the road from Kashgar it is 100 feet wide, level with the bank, but flows here in a greatly diminished stream, about 25 feet wide, between high banks, 20 feet below the level of the surrounding country. Its character was so altered, that it was only after repeated assurances from the natives that I satisfied myself as to its being the same stream.

"The Hakim Beg, of Maralbashee district, has the title of Dadkhwah: the present one, by name Ata Bai, is an Andijani. He is a man of about 35 years of age, with especially pleasant address, and seems much liked by the people, who all speak highly of him.

"The natives of the district are called Dolans: they have a more Tartar-like cast of countenance than Yarkandees and Kashgarees, and are said to be distinguished for their fondness for music and singing. They are said to be descendants of prisoners brought in the 4th century of the Hejra by Harown Bugra Khan from Mowralnahr, and forcibly settled in the country between Maralbashee and Kuchar. In the

jungle villages they excavate houses out of the ground, making grass roofs level with the surface. The term Dolan is applied generally to men of mixed parentage.

"The fort is of the same kind as others we have seen in the country, with earthen ramparts, about 30 feet thick and 25 feet high, a low parapet, forming a kind of covered way, and ditch: it forms a square of about 170 yards, with projecting circular bastions at the angles, three of them having square towers on them; also a circular bastion in the centre of each face. Close outside the fort is a palace lately built by the Amîr.

"Nine miles to the north-east of Maralbashee is a huge black rock, with treble peak, rising to a height of some 2500 feet above the plain, apparently basaltic: it is very rugged and quite inaccessible, and forms a conspicuous landmark. It is called 'Pir Shereh Kuddam Moortaza Ali Tagh.' At its foot on the north side is a Mazar of great sanctity. The Aksu road runs within a mile of it, and travellers, on catching sight of the shrine, dismount and say a prayer.

"Four days after my arrival at Maralbashee, the Dadkhwah Ata Bai came in from Orumchi, after an absence of ten months: he had with him about 120 men, and had been present at the recent fighting at Manass. I was told that a great number of desertions had taken place from the army: upwards of 400 men, it was said, had deserted into Russian territory. Of the contingent from Maralbashee, four had been killed and twenty had deserted.

"From Maralbashee I went to Charwagh, the first stage on the Asku road, a village of about 250 inhabitants, and spent several days in shooting and hawking. I was especially anxious to shoot a tiger, of which there are many about, but was unsuccessful in the sea of high grass with which the country is covered. From signs which I was shown, and footprints which are common everywhere, and judging by what I was told, there is no doubt that the tiger here is altogether a smaller animal than his Indian congener; he seems also to differ considerably in his habits, prowling round villages at night, killing dogs and sheep, and behaving more like an Indian panther than a tiger. The natives spoke of men being killed by tigers occasionally; but it does not appear to be a common occurrence.

"The jungle abounds with pheasants, which gave good sport with hawks; and I also saw the burgoots, or trained eagles, kill gazelles and foxes. I was not fortunate enough to see a wolf killed by them; but from the great ease with which an eagle disposes of a full-grown fox, I could see that a wolf would have no better chance.

"Grasping with one powerful talon the throat of his victim, the burgoot seizes his jaws with the other, keeping them closed with an iron grasp, so that the animal is powerless.

"Gazelles are seized in the same way, except those with horns, in which case the eagle first fastens on to the loins of the animal, and watching his opportunity, transfers his grasp to the throat, avoiding the horns. It is a fine sight to see the great birds sweeping up to their prey.

"I saw at Maralbashee a Punjabee, serving as a soldier, who gave me much interesting information, which I have recorded elsewhere. The country round Maralbashee is well watered, and the soil rich, and seems only to want population. There are many traces of old cultivation now overgrown with jungle.

"I left Charwagh on the 16th, and returned to Kashgar on the 23rd January by the same road which I went by. I was invited to go further along the Aksu road, and believe that no difficulty would have been made about my going to Aksu itself, as during the whole time I was absent from Kashgar no attempt was made in any way to control or direct my movements. I received whatever supplies I was in need of, and was treated by all officials with the greatest civility. On one occasion a Moolla, having forced his way into my room and asked me for a turban, was severely punished by the Governor."

The following extracts from a further letter of Captain Biddulph's, furnish an interesting account of the journey over the Pamir:—

"KILA PUNJA WAKHAN, *April 14th*, 1874.

"This, if it reaches you at all, will arrive considerably before the letters I have written to you from Kashgar, so I will recapitulate our movements. We left Kashgar on the 17th of March, and after two days at Yangi Hissar, Gordon, Trotter, Stoliczka, and self, came on here, and arrived yesterday. We had an uncommonly rough time of it, having been travelling in snow, with bad weather, from the day of leaving till now. The cold was not so severe as on the Karakorum; but the great amount of snow creates much discomfort, and cuts our faces about tremendously.

"We came through Sirikol, Tashkurgan, to Aktash, and over the Little Pamir, by the lake marked on the map as Burkut Yassin, though the name is a pure invention. The Pamir is not, as far as we can gather, a great steppe which can be traversed in any direction, but consists of a series of broad, elevated valleys, along which the different routes run. The way we came is the winter route, the elevation being 13,000 feet; but we had to cross four passes between Yangi Hissar before getting on to the Pamir. It appears that the drainage of the Pamir is all to the west, the Pamir itself not being the true watershed, but the Kizilyart Plain, extending from north of Tashkurgan to the Alai, belonging to the Amîr of Kashgar. We have also solved the drainage of the Karakul, which has hitherto been a favourite subject of geographical discussion. There are two Karakuls, one draining east and one west. The most important geographical fact we have ascertained, though, is that the uninhabited parts we have come over, instead of belonging to nobody, are the property of the Mîr of Wakhan, our present host, whose boundary marches with that of the Amîr of Kashgar.

"All supplies were brought with us, sent by the Amîr, whose liberality all through has been unbounded. We had sent on Mahomed Afzul ahead of us to announce our coming, and found Mir Futteh, Ali Shah's son, ready to meet us at the first village. Of course they had not expected us, and were in a great state at our coming; but finding that we wish to pay our way, and will not eat them up, they were more satisfied; but you can hardly imagine a more miserable country—there are not more than a thousand inhabitants, and the climate is so severe that for five months they never go out of their houses, except to collect firewood. Luckily, the Mir of this place is very civil, and gives us all we want, or we might

be in a fix, as our animals are so broken down that they require a fortnight's rest before we can face the Pamir. We hope to go back over the Great Pamir by Wood's Lake; but they tell us it is impossible on account of the snow, of which more has fallen this year than usual, so we are sending two men to see. These tributaries of Shere Ali's are very independent fellows. Futteh Ali Shah is a very feeble old man, very ill, and just now much oppressed by a debt of 400 Rs., for which he has an inexorable creditor living on him. We are thinking of paying off the national debt and thereby earning eternal gratitude. The people are peaceable and Gurreeb, and have a great respect for the Dowlut (English Government). We have just got a despatch from Cabul, written, of course, before they knew of our leaving Kashgar, and are sorry to find that there is no chance of our going back that way; so we shall load up and start back for Yarkand, across the Great Pamir by Wood's Lake, but shall require ten days here first to repair damages and prepare for the journey, as our cattle have suffered considerably, and the Great Pamir is 2000 feet higher than the little one.

"We have got some rather important information about the geography of these parts. The uninhabited tract that we have just traversed, instead of being a 'no man's land' as had always been imagined, belongs to the Mir of Wakhan, who joins hands with the Amir of Kashgar, within two marches of Sirikol. This is also acknowledged in Kashgar, and is a well-known fact to travellers and others, and there seems no doubt about it. The real watershed between the east and west is the Kizilyart Plain, which belongs to Kashgar. I send you a rough map, which will show you how the rivers run, quite differently to what has been hitherto accepted; the proportions are a little out, but otherwise it will give you a good idea of boundaries, &c. The Pamir, instead of being a steppe which you can march across in any direction, consists, as far as we can make out, of a series of broad valleys at a great elevation, called by the names of different Pamirs, along which the different roads run. The whole way from Aktash to Sarkud, four days' march, we were in one broad valley, there being no perceptible rise between the lake and the commencement of the waters flowing west. We saw great herds of Ovis Poli, and at every step their gigantic horns were sticking up out of the snow, but there was no possibility of stopping to shoot, and our marches were so long that we were obliged to start our baggage-animals off before light, and they effectually frightened all the game off the road. There are no yak on the Pamir, but there are bears, quantities of wolves, and a black kind of ibex.

"By-the-bye we found an Englishman in Kashgar: he was always hanging about our Elchekhana, and we noticed him and suspected him of being an Englishman from the first; but he called himself a Nogai Tartar, and said he had been in Russian service. The day we left he took service with us as a mule-driver, and at Yangi Hissar, Gordon caught him reading out of his book while he was sketching, and taxed him with being an Englishman, on which he bolted and was seen no more. The poor wretch is probably a Crimean deserter."

LAND COMMUNICATION BETWEEN EUROPE AND CHINA.*

THE completion of the railroad across North America first suggested the idea of more direct communication between Europe and China, the chief consuming and producing countries of the world. In considering the question in detail, the object to be sought is of course the utilization of existing trade-routes in combination with existing lines of railway, and two projects have thus grown up which it is desirable to consider a little at length.

The Russian project starts from Nijni-Novgorod as the terminus, and runs by way of Tiumen to the foot of the Ural Mountains, past Omsk, Tomsk, Irkutsk to Kiachta, whence it crosses the desert to Peking. But it has many manifest disadvantages. The proposal involves the union of about the furthest point of the Chinese Empire with Europe, by means of a railway passing over numerous large streams, and through a thinly populated and comparatively barren country, which boasts few commercial towns and little or no produce, likely to create an intermediate trade; the bridges would be continually damaged in spring time through the breaking up of the ice; any local disturbance near the line would probably block the entire route, while along the whole length of line, and especially in Mongolia, there is a scarcity of coal.

The English projects consist in uniting the valleys of the Indus and the Ganges on the one side with Europe, and on the other with China. Inasmuch as this involves the question of direct communication with a country possessing 240,000,000 of inhabitants, and with a neighbouring kingdom of 30,000,000, it is clearly a matter of great interest and importance. We shall probably soon be in a position to judge of the practicability of the route, whether through Asia Minor and Persia or along the valley of the Amu to Peshawar. The more eastern project, however, I venture to urge may be safely set down as impracticable. The rail has at present got as far as Dacca, in the delta of the Brahmaputra. From thence it is proposed to push on either towards Sudya or Ava and Bhamo. But in either case one finds one's self in a *cul de sac*, for the nearest town situated in the plains of China is I-chang-fu on the Yang-tse, and the distance between that point and either Sudya or Bhamo is as great as from Berlin to Constantinople, while the intervening country is so mountainous that half-a-dozen St. Gothard's tunnels would have to be pierced, to say nothing of other physical difficulties.

To any one looking at the question *from a Chinese standpoint*, neither of the foregoing projects would ever by any possibility occur. The goal, to be reached, it must be remembered, is that densely-populated and fertile alluvial plain which lies beyond the eastern prolongation of the Kuen Lun range and between the lower courses of the Yang-tse and Hoang-ho. To the south of the Kuen Lun, this plain is inaccessible from Sudya and Bhamo, because both these towns lie beyond the heavy mountainous region shutting it in on the west. But in other directions this great plain extends out considerably. To the north, where the Hoang-Ho breaks out from its mountain cradle, lies the true gate towards Central Asia. There

* Paper read before the Berlin Geographical Society, 11th of April, 1874.

is, indeed, an opening in the mountain barrier northward by Peking, but this has been already considered above, and shown to be unlikely. The real key to communication with Central Asia is the town of Si-ngan-fu which lies on a broad plain at the foot of the northern slope of the mountain range. Westward from hence a wide natural route extends straight away into Central Asia, and eastern travellers who formerly, in the days when Si-ngan-fu was the residence of the emperors, directed their gaze towards the coast or up the great Yang-tse, now instinctively turn towards the above-named route and recognizes that at once as offering the best line of approach, whether for caravans or armies, as well as the best, if not the only site for a line of communication. This belt of country, if so one may term it, leads past Lanchow-fu, through remarkably cultivated districts, which have been described by Rémusat and Carl Ritter, and in which the towns of Lan-chau-fu, Kanchow and Su-chow successively occur. To the south this belt is shut in by the lofty Kuen Lun Mountains, peopled by Mongol and Tibetan tribes, and to the north by endless steppes and deserts overrun by Oelot races. The intervening tract is narrow, but level and fertile. Hard by Su-chow it widens out, and a little beyond the last great gate (Kia-yu-kwan) the great wall is reached. There are passages in Chinese history which show that when commanding the road and its approaches, the emperors had no difficulty in keeping back all invaders from the west. While they have never striven for the dominion of the countries to the north and south of them, it has for 2000 years been their policy jealously to keep this pass, which, commercially and strategically considered, is the key to all approach from the west, and which also forms a wedge of separation between unfriendly tribes to the north and south, who, united, might at any time have proved a source of danger to the empire. No sacrifice has ever been spared to keep hold of this position, and the same policy is pursued now. The neck of the Muhammadan rebellion was never considered broken till the road to Su-chow and the Kia-yu-kwan gate were both recovered by the Chinese.* All these events go to prove the enormous importance of the route.

From the gate in the great wall the road runs for a distance of 1560 *li* towards the fruitful and fertile oasis of Hami, up to which point it is pretty level; but at no great distance from the oasis it sinks where it crosses the adjoining desert, to which, by the bye, the name of Shamo or Gobi is wrongly applied. For three days' march the road leads through a waterless desert, the perils of which have been depicted in vivid colours by some travellers, while others, strangely enough, have omitted all mention thereof. Beyond the road lies through steppes.

At Hami the great Tian-Shan range is reached, and the road bifurcates, the Tian-Shan-Nanlu road running southward from one oasis to another, past Kashgar and Yarkand, and the northern one, Tian-Shan-Pelu, leading along a steppe-like country studded with wells, past Barkul to Kuldja, the furthest point up to which the present dynasty of the Tatsin has extended its direct sway. As our readers most probably know, this town was a few years back captured by Muhammadan rebels, and, in 1872, annexed by Russia.

The trade-route from Si-ngan-fu past Hami to Kuldja is the best natural line for a railway from China to Europe. It might be satisfactory to some, did space permit, to furnish here some particulars regarding the nature of the country, as supplied to us by travellers. But the best proof of the goodness of the road, and the absence of any important physical difficulties, is that up to the time of the recent political disturbances, camels were rarely used by travellers, but waggons almost exclusively adhered to. In the town of Si-ngan-fu, a two-wheeled car, with two mules can be commonly hired, which will carry (not reckoning the driver) two persons and 700 lbs. of baggage, or 1100 lbs. without passengers. The most difficult stretch of road is apparently that between Si-ngan-fu and Lan-chau-fu, inasmuch as a lofty mountain has to be scaled; but the gradients on both sides, more especially on the west, are easy. Beyond this the road is level, and supplied with wells as far as the river I'lí, while an extra horse is not required even for the sandy tracts. A good idea of the character of the journey may be gathered from the fact that the distance from Si-ngan-fu to Kuldja is 8020 *li*, or 2245 miles, and that it can always be accomplished in eighty days, at a cost of about 12*l.* to 13*l.* for the conveyance. Nothing is gained, but on the contrary difficulties are encountered, by deviating from the road. A railway could, it is true, be laid from Hami to Yarkand, a distance of 1335 miles, but Yarkand is situated in a regular *cul-de-sac*, being perfectly inaccessible from the north, west, and south.

The advantages of this route over all others are manifest. It is the most direct line of communication between China and Europe, and it enters China Proper at the only point where a good road exists from the westward. Such difficulties as arise from broken and mountainous country are (as unanimous accounts tell us) conspicuous by their absence. The approach from the plains of China to Si-ngan-fu and the road from thence for a part of the way towards Lan-chau-fu, is not unaccompanied by difficulties, as the yielding *löss* soil is there met with; but, immediately on entering the thickly populated districts of China, one may look for a most profitable return for one's capital.

With the exception of the Hoang-ho, there are no large rivers to cross, and the road is not thus endangered by periodical floods or the breaking up of ice. In winter the climate is, in truth, raw and cold, but, as far as we know, sufficient snow does not fall to occasion a block.

As far as the density of population is concerned, there is not much to choose between the country which this railway would traverse and South Siberia; there are, however, stations on the route which "tap" extensive tracts of country, and which are kept supplied with Chinese products, especially silk and brick-tea. From Lan-chau-fu there runs a caravan road to Sining-fu, which is a mart for Koko-Nor and Tibet, and another to Ning-hia-fu for the Ordos Land and the greater part of Mongolia. Turning away from these intermediate posts to Hami and Turfan, we may rest assured that they will become important centres

* This fact is corroborated by the Peking correspondent of the *St. Petersburgh Gazette*, see *Geographical Magazine* for April, 1874, p. 20.—Ed. *G. M.*

of commerce, the first as an *entrepôt* for Yarkand and its dependencies, and the second for Uliassutai and Kobdo, while a line of trade stations would spring up along the northern slopes of the Tian-Shan. The trade of Si-ngan-fu with Central Asia might thus attain any dimensions.

But there is yet one feature which lends supreme importance to this route. The province of Shansi, which was carefully explored by the author of this article, can hardly be surpassed by any other province or country of the world in its wonderfully favoured coal deposits. These beds appear to run uninterruptedly through Shansi and Kansu. In the former province the seams are difficult to get at, but in Kansu they rival those of Shansi. Every province, indeed, north of the Kuen Lun range is well provided with coal, the seams being thick and the coal of excellent quality. From thence towards Hami, and from Barkul along the northern slopes of the Tian-Shan as far as Kuldja, coal is pretty abundant, and used as fuel at every station; while further south they are obliged to make use of grass and odds and ends of timber. As a rule in China, coal is never conveyed more than about 20 (German) miles from the pit's mouth, as carriage enhances the price so much; should, therefore, the information derived by the writer from native travellers be correct, coal beds must occur at most every 40 miles, and that through a country extending over about 30° of longitude, from the eastern borders of Shansi as far as I'lí.

The line is one not only favoured by nature, and one of which the importance is borne out by history, but its direction is exactly that best suited for the object sought, while the ease with which it can be laid down and maintained will render the cost of transporting goods very moderate.

The writer does not profess to give an opinion on the best route eastward after reaching Kuldja; in a geographical point of view there is here no knotty problem to solve, and the direction finally chosen will probably be determined on from political considerations in preference to any other motives. Leaving the valley of the Upper I'lí one soon reaches the level of lake Balkash, whither several railway-projects propose to run. Whether the railway from China will here be joined on to the proposed line from Tiumen past Omsk, Semipalatinsk, Vernoye to Turkistan and Tashkand, and thereby a communication effected with Europe, or whether efforts will be made to make a junction with M. de Lessep's proposed line to India, or whether again a line will be carried from thence right across the Kirghiz steppes to Russia in Europe, these questions have but a slight importance as regards that portion of the trans-continental line which will cross the plateau of Central Asia, inasmuch as at the most it can but effect its extreme western end. There can be little doubt that when the subject of land communication with China is taken seriously into consideration, it will be seen to be of the very first importance, while that with India is entirely of secondary interest, forming, indeed, as it does, but a part of the other.

To some sceptics the above scheme may savour of an excess of enthusiasm, but in the opinion of the writer its completion only awaits the development of interior affairs in China. Already have native merchants in the treaty ports learned to appreciate the importance of the telegraph, and the government has shown interest in the question of steamship communication, not only by the publication of an official paper, but also by encouraging the foundation of a Chinese Steamship Company. The Chinese are, in truth, a conservative people, but theirs is a conservatism which never retrogrades when it has once effected a reform. Railways may take years to make their way into the country, but when they are once introduced, *vestigia nulla retrorsum*, they will infallibly be caught up everywhere, for their appreciation of anything likely to pay is extremely lively. Thus strategical, political, and commercial considerations combine to make the construction of a railway from Si-ngan-fu to Suchow one of the most important events which could happen to China.

The importance of adopting the foregoing suggestions as to the question of railway communication between Europe and China is such as it would be difficult to estimate too highly. Europe, which is now beginning to feel the benefit of increased commerce with China, may well look with envy at Russia who will undoubtedly profit most by a railway across Asia. But when one particular country is favoured, as in the present case, by its geographical position, it is so much the more important to make sure of the probable consequences which will result from the inevitable development of events. The political and purely commercial results of such an undertaking, of course, lie beyond the scope of the present paper. But the effects of the bridging over of the vast expanse between the eastern and western civilisation, and the results of an influx of western ideas into the heart of China, a consummation against which she has striven so hard, is full of interest to all alike. The enormous amount of manual labour available, and the inexhaustible supplies of coal will cause the stream of European manufactures to flow back in its course. In all probability an important flow of Chinese emigrants will set westward, to partake of the advantages of a settled rule, and thus the extensive regions in Russia which at present are peopled by nomads may eventually be brought under the plough. Industry, practical sense, and temperance, constitute the Chinese as a people peculiarly fitted for agriculture.

Since the publication of the above remarks, the project has been discussed in Russian journals, and a signal proof of the importance attached to the general question of communication with China is shown by the fact that an expedition thither has already been organized, under the leadership of Captain Sossnofski, who is to be accompanied by a surveyor, a photographer, and three Cossacks. The party will journey from Kiachta to Peking; from thence to Si-ngan-fu and Hankow; and thence up the Han River, past Mienhien, and straight through Central Asia to I'lí.

BARON FERDINAND VON RICHTHOFEN.

A NEW VOLCANO EAST OF JAPAN. — Messrs. Alfred Rixon and Co., of Eastcheap, state that the captain of their steam-ship 'Harwich' has reported the discovery by him, on the 31st of December, while journeying from Japan to Hong Kong, of a large volcano, not marked on any of the charts, in latitude 31° 31′ N., and longitude 140° 14′ E. of Greenwich.

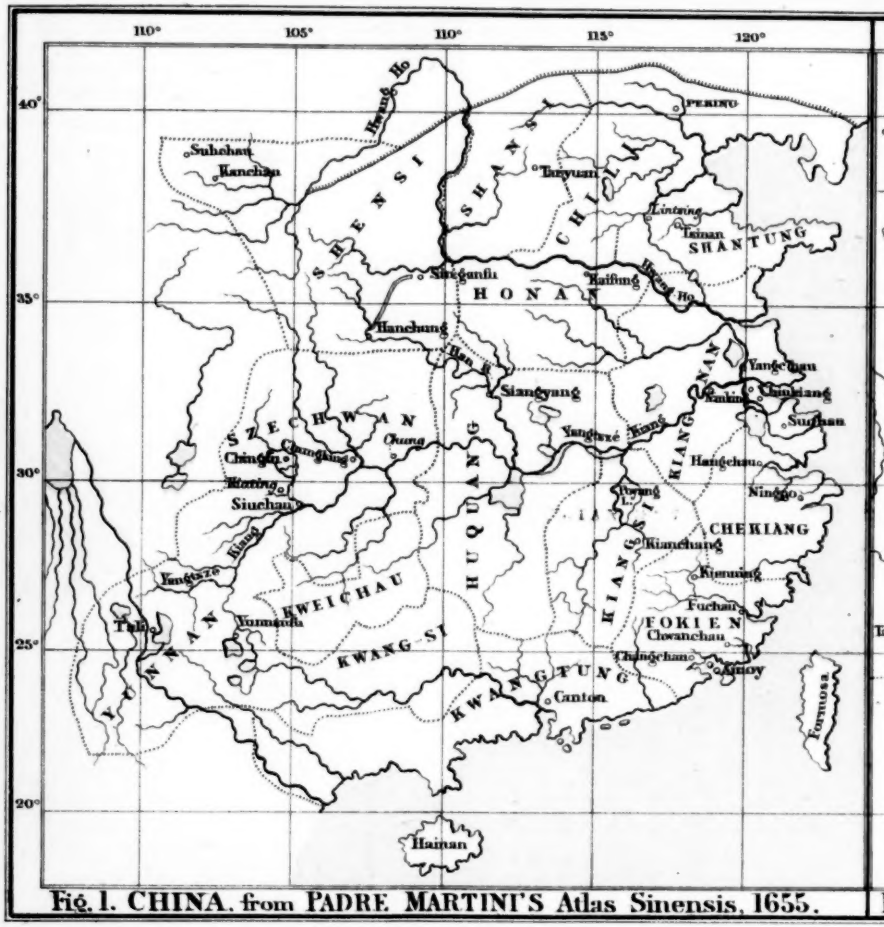


Fig. 1. CHINA, from PADRE MARTINI'S Atlas Sinensis, 1655.

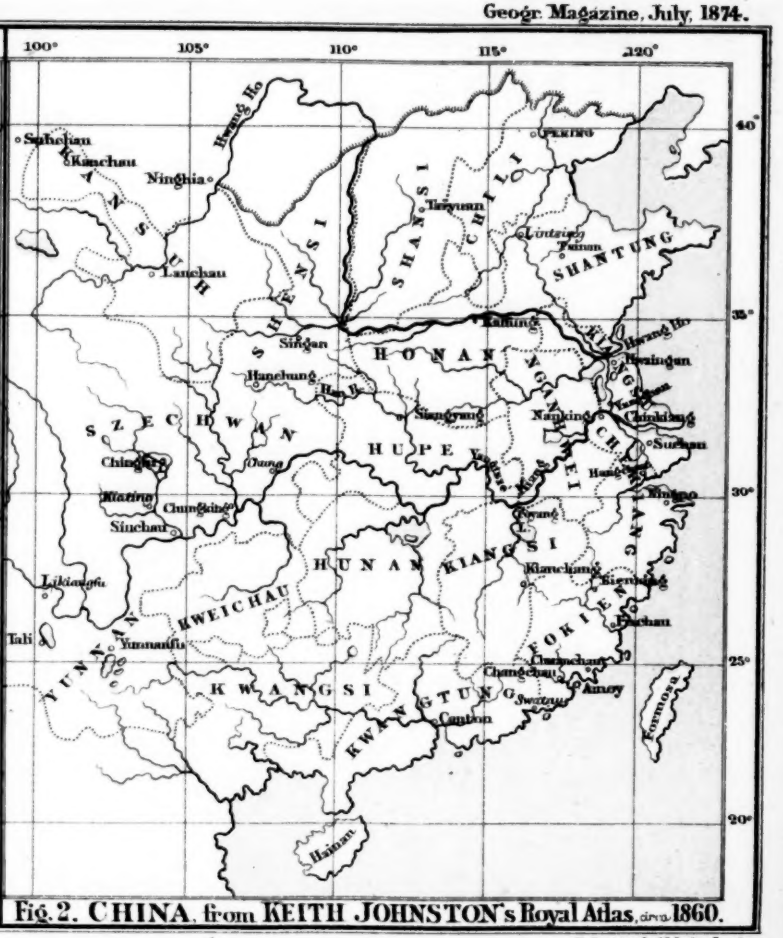


Fig. 2. CHINA, from KEITH JOHNSTON's Royal Atlas, circa 1860.

T. Pettitt & Co., Litho, London.

THE ATLAS SINENSIS AND OTHER SINENSIANA.

AMONG the worthies of the past who deserve an enduring place among geographers, is surely the Jesuit Martin Martini, the author of the *Atlas Sinensis*.

That great work, as it well deserves to be styled, has been overlaid and displaced since D'Anville's publication of the systematic surveys executed by the Jesuits of the next generation, and probably few are now aware how good were the maps of China before D'Anville. To illustrate this, I have drawn out upon the same scale, on the same graticule, with common parallels, and with the assumption of the same meridian for Nanking, the skeleton of the general map from

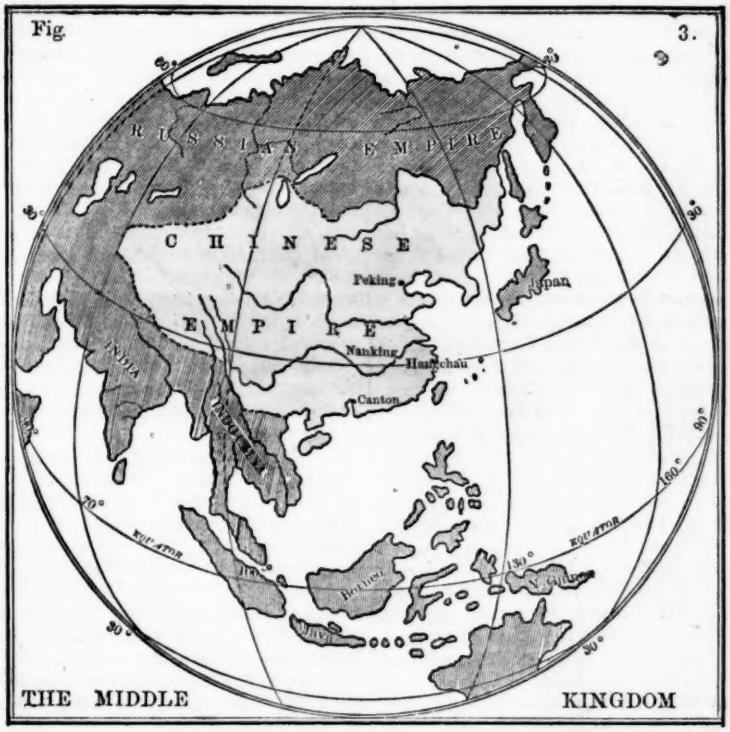


Fig. 3.

Martini's Atlas, and that of Keith Johnston's Royal Atlas. I doubt if we should find the like collation of the map of any country in Europe executed in the middle of the 17th century, with a recent map of the same country, to afford a result equally creditable to the older map.*

Now this older map was based in large measure upon the indigenous maps of the Chinese themselves. Correction no doubt was applied from the observations of the earlier Jesuits, and probably the moderation of the limits of extreme error in the contour of the map is due to such observations, but we cannot tell to what the correction thus applied to the native materials amounted—something on the matter will be quoted below from the *China Illustrata* of Kircher; but there is very little information on the subject to be found in the *Atlas Sinensis* itself. One of the official sanctions to the publication, dated Brussels, 25th March, 1654 (meaning apparently 1655 of our calendar), calls the book, "a book written with the greatest conscientiousness and diligence, with extraordinary study and toil, compiled and put in shape from materials furnished by fifteen trustworthy geographical works, and now first published along with the maps of the same kingdom copied from the Chinese themselves" *(cum mappis geographicis ejusdem regni ex ipsis Sinensibus archetypis expressis)*. The most important allusion to the subject by Martin is in his Dedication to the Archduke Leopold, governor of the Low countries: "God having given me a call to China, during the time I have spent in that country I have traversed a large part of it, carried hither and thither, either in the blessed business of soul-hunting, or in flight from Tartar rage; I have examined the position of all the provinces and cities, and surveyed them accurately *(inspexi . . . accurate que dimensus sum)*, even till I came to a halt on that prodigiously long and stupendous wall . . . near the extremest limits of the East, and thence looked down upon the wide empire and many realms under Chinese sway, and subjected them to celestial measurement."

Again he refers to the error of the older maps (Mercator and the like) which placed the Wall in something like 50° of latitude, "when it is scarce two days' journey from Peking, and the latitude of that city does not exceed 40°, as I remember often to have

* There is a slight apparent fallacy here, for in this case the *recent* map is mainly dependent on D'Anville's, nearly 150 years old. But all actual recent surveys show D'Anville to be wonderfully correct in the main.

observed along with my brethren; in fact, it sometimes came out 39° 59′."

An example of the native maps, such as were employed by Martini in forming his atlas, is to be seen in the Magliabecchian Library (now the Bibbioteca Nationale) at Florence. This bears a date corresponding to 1595, and was given to the Grand Duke Ferdinand I. by the traveller Francesco Carletti, who returned from his travels in 1601. This atlas contains maps of the then recognised fifteen provinces of China, and a variety of special maps of military frontiers, &c. It did originally contain a general map of China, but some rascal of a collector has torn it out. The provincial maps are all laid down on a graticule, but instead of being one of latitudes and longitudes, this consists of squares of 100 *li* to the side.*

The letterpress of the *Atlas Sinensis* is, like the maps, derived from Chinese topographical works, but is enlivened in many parts with notices from the personal knowledge of Martini; and he especially delights to expatiate in illustration of Marco Polo, of whose book he was the first intelligent elucidator; this he does with a genial enthusiasm which draws one to the man. Martini, a native of Trent, was at one time head of the mission at Hangchau, a city which then seems to have retained a large share of the glories of Kinsay, the name by which Polo has described it. In 1651, he was sent home on a deputation to Rome, but it was three years after his departure from China before he got there, for the ship was driven by storms north as far as Norway, and thence he travelled through Holland and Germany. After his business at Rome was done, he was despatched to Portugal, and embarked again for China with seventeen recruits for the mission. The same ill fortune befel the party; they fell not only among storms, but among pirates, who ill-treated them, and only after two years of mishaps the survivors reached Macao in an exhausted state. The *Biographie Universelle* says that Martini died at Hangchau, 6th June, 1661, his age being only forty-seven.†

Martini probably arranged for the publication of his atlas when in Holland on his somewhat circuitous route from China, *viâ* Norway, to Rome. It was published by Blaeuw, at Amsterdam, in 1656, and afterwards embodied in the tenth volume of that splendid work, Blaeuw's Atlas (1662).

Some indication is given by Kircher of work done by the Jesuits of the generation before Martini, which, no doubt, contributed very materially to the comparative accuracy of the maps of the *Atlas Sinensis*. Matteo Ricci—the first of the Order to gain a firm footing in China—was himself an accomplished mathematician; and, as early as 1611, the year after his death, two of his colleagues were employed on operations preliminary to the reformation of the Chinese calendar. Padre Giacopo Pantoja, one of these, devoted himself first to the establishment of the longitude of Peking by lunar eclipses, and then to the determination of the latitude of a series of the cities of China, from Canton north to Peking, by observations with the astrolabe. We cannot doubt that these observations were made use of by Martini in the correction of the Chinese materials.

Ricci was accused by the enemies of the Order in his own church of having set an example, followed by his successors, in too great laxity of accommodation to practices and opinions deeply rooted in the habits and feelings of the Chinese, but hardly compatible with Christianity; and we find a curious illustration of those tendencies of the man, which gave a basis for such accusations, in his dealing with geographical subjects. Among the scientific achievements of his time, which he took with him into China, there was a fine set of maps, which created at first great interest, but afterwards great disgust, when the Chinese came to appreciate the insignificant place awarded therein to the "Middle Kingdom"; thrust into a corner, instead of being set in the centre of the world, like the gem in a ring. Ricci, seeing their dissatisfaction, set about constructing a map of the world on a great scale, so adjusted that China, with its subject states, filled the central space of the hemisphere, and, without deviation from truth of projection, occupied a large space in proportion to the other kingdoms gathered round it. All the names were then very clearly entered in Chinese calligraphy. This map obtained immense favour, and was immediately engraved at the expense of the Viceroy of Canton, and widely circulated.

In the accompanying map (Fig. 3) we have endeavoured to realize this *Jesuitical map*, as we fear it must be called. Our map is a perspective projection of the hemisphere from a point at the distance of one diameter from the surface, and situated on the production of the radius which passes through the intersection of 115° E. longitude (Greenwich), with 30° N. latitude. Something pretty near this must have been Matteo Ricci's projection; with a vertex much more distant the desired effect would be impaired, and with one nearer neither of the poles would be seen whilst the exaggeration would be too gross for a professed representation of the globe.

H. YULE.

* Kircher says positively that the Chinese had no notion of latitudes and longitudes. Such knowledge must surely have been introduced by the Western Asiatic savants whom Kublai and his successors employed on the Astronomical Board, but it would seem to have passed away with them.

† Yet it is stated in the narrative of the Dutch Embassy of Van Campen, as given from Montanus, in *Astley's Voyages*, (iii. 437), that at a city of Fokien, which the narrative calls *Hokswa* (and which must be, as far as I can make out, *Hinghwa*, south of Fuchau), the party "met here with a slave deserted from Makau, who led them to a Christian temple, without the city, and told them that Martini, the Jesuit, who wrote the Chinese Atlas, died there thirty-seven days before." This was on 18th October, 1662, and would put Martini's death in Fokien, 11th September, 1662.

FUTURE OF THE FANTIS AND ASHANTIS.

IT is singular that whereas during the last twenty years the eastern and central parts of Africa have been traversed by many adventurous Englishmen, whose labours have enabled us to map out with tolerable accuracy vast tracts of country hitherto unknown and unexplored, next to nothing has been done upon the western coast. This is the more singular, since upon that coast there are numerous ports belonging to England, and a considerable extent of territory under her protectorate. At these ports expeditions could be organized under the most favourable circumstances, every assistance would be afforded by the resident merchants, and servants, carriers, and interpreters of known antecedents engaged. Yet in spite of the great

advantages which such bases for expeditions afford to explorers, next to nothing has been done upon this western coast of Africa. Two or three gentlemen have indeed made little exploratory excursions, and reputations have been established upon the strength of trips which would provoke a smile from the great explorers of the East. The reasons for this pause in the progress of our geographical knowledge in that part of Africa which abuts upon our own possessions are manifold. The most cogent, however, is unquestionably the existence upon our northern frontier of the two powerful kingdoms of Ashanti and Dahomey. The monarchs of these countries have alike been averse to the presence of white men at their capitals, and hostile in the extreme to any passage through their territories to the tribes lying beyond them. Both capitals have been visited by white men, but they have travelled by certain roads and under certain conditions; and although, therefore, the direct roads from the sea have been pretty accurately described, the country beyond these narrow paths has been known to us only from native description. The great width of the belt of tropical forests, with its accompaniments of fever and dysentery, has likewise acted as a bar to travellers, while the depressing influence of the climate upon the coast has checked the enterprise of the English merchants resident at the ports.

It has been well said that the almost unbroken success of British arms is due in no small degree to the fact, that the British soldier never knows when he is beaten. It would certainly appear that the same ignorance of defeat is the only reason that can be assigned for the continuance of the British Protectorate upon the west coast of Africa. England is so accustomed to success as a colonizer that she shuts her eyes to the fact of her utter failure here. The establishment of European settlements upon the Gold Coast was almost coeval with the first settlements upon the shores of America. Africa offered brighter prospects of fortune than did America. The wealth of vegetation was unbounded, the soil was rich with gold, the natives were a peaceful race, differing widely from the fierce North American savage. And yet, in the one case we have colonized a continent, in the other, putting aside civil and military officials, the British population consists of some ten or twelve British merchants and clerks scattered from Cape Coast to the Volta. There can be no reason for supposing that the men who have during these 300 years gone out to Cape Coast have been one whit less energetic, less vigorous, less likely to open out a country, to make roads, to spread the civilization of the white man, than were the men who went out to America. The fact, then, that they have in all this time done next to nothing—that there are no roads made, no forests cleared, no ground brought under cultivation—is a proof that we cannot succeed in so pestilential a climate. It is probable that this vain effort, this struggle against nature would have ceased long ago, had it not been for the slave trade in the first place, and, after its abolition, for the missionaries. England having come to the resolution to abolish slavery, it was for a time most important that we should retain our hold of the West Coast, and thus entirely put a stop to the debarkation of slaves from that tract of country.

In spite of his long association with Europeans, the Fanti, outside the coast towns, is in a very primitive state. He uses European implements to a certain extent; but even in the matter of axes for felling trees, he still prefers a little hatchet made very much after the model of the axes of the stone period. With this he sits down at the foot of a tree and literally wittles it away until it falls. It is true that it takes him twenty times longer to accomplish his task than if he had used a broad felling-axe, but then the labour is but slight, and a negro hates above all things to exert himself. His utensils are of his own manufacture, and his clothes are of the most primitive kind. His huts show no sign of the influence of the white man, but are badly built, dirty, and uncomfortable. He is cleanly in his person, because he enjoys the coolness of water, but beyond this he has little idea of the meaning of the word cleanliness. He is, in fact, as much a savage as ever—indolent, crafty, false, and hating all change or innovation. His wife does all the hard work; and he has not even the exercise of the chase, which in other savage countries is, with fighting, the man's great duty as well as amusement. Outside the coast towns and a few missionary stations inland it is not clear that the influence of the white man has effected any change whatever in the condition of the negro. It might have been expected, however, that in the sea-coast towns, where Europeans have been resident for centuries, where European articles of all sorts are to be purchased, where European teaching is given to children, where there are European churches, and, above all, European employers and masters, a great change would have been effected. Except, however, among a very limited class this has not been the case. At Cape Coast, for example, there are, perhaps, some ten men among the native merchants who are as well informed as Englishmen in the same position of life. There are, perhaps, another twenty who have a very superficial education, who wear European clothes, carry canes in their hands on Sundays, and are upon a par with assistants at small shops here. There are some ten or fifteen of the wives and sisters of the upper classes who wear European clothes and can speak a little English. This is a fair *resumé* of the amount of improvement and civilization which English colonization has effected in three centuries. And, singularly enough, it would be found, could their ancestry be traced back far enough, that a great proportion of the classes I have mentioned have English blood in their veins. The surprising circumstance is that in no other way does the white blood show.

It is and always has been the almost universal practice for white men resident upon the coast either to go through some sort of marriage ceremony with a black woman, or to live with her without such a ceremony. What with merchants, clerks, officials, military men, and sailors, the number of white men on the coast has always been large. What has become of their offspring? The black population must be leavened with white blood—how is it that there are no signs of it either in colour or in feature? The answer is plain. Man may make changes, may hybridise, may so alter the appearance of things, animate and inanimate, that they will scarcely be recognized as allied to the original stock; but when man's care is withdrawn, and nature steps in, they revert to the old type. Turn the most gorgeous pansy out into a field, and leave it for a few years, and you will find the common wild heartsease

growing in its place. So with the cross between the Anglo-Saxon and the negro woman. The children will for the most part follow the mother, and even the whitest of the children will, after marriage with negroes, be the parents of infants without a trace of their grandsire's white blood. It is not too much to say that there are not ten adults in Cape Coast whose features or colour indicate anything but pure negro blood.

Outside the circle of what are called the educated negroes, there is no sign that the natives have been improved or civilized by contact with the white man. There are, indeed, a considerable number of nominal Christians, because a good many children are sent to school, and at school they learn the Christian religion. Many of them continue in after life to attend Christian places of worship, because it is the respectable thing to do, and a negro loves to be respectable if it can be done without labour. No trace, however, of the white influence can be seen in their dress, their habitations, their customs, or their morality. Their dress is similar to that of the inland tribes; their houses are in no degree superior; their marriage ties are of the slightest; they are as lazy, as thriftless, as untruthful. What then have civilization and Christianity done for the negro that England should continue to pay so dearly to carry the experiment farther? It is true that Sir John Glover has spoken in terms of admiration of the conduct of a body of Christian negroes from the Basle Mission. The Basle Mission, however, proceeds upon the method of gathering its converts around it, and of making of them good workmen and prosperous men. It was natural that, trained by these missionaries, the negroes would be far more amenable, and would obey their officers more readily, than the bulk of the race. So far it may be readily admitted that much good is done by these working and trading missions. With the exception already named, it may be taken that the intercourse with the whites has failed altogether to impress a general tendency towards European civilization upon the negro. It is very curious to observe how, in Ashanti, an exactly opposite effect has been produced by the intercourse with the Moors upon the northern frontiers of that kingdom.

The Ashanti and Fanti tribes were originally one. Their language is almost identical, their features are similar, their traditions prove that the separation took place at no very distant period. The climate and circumstances of the countries are sufficiently similar for us to assume that these have had no great influence in modifying the intellectual capacity or physical condition of either race. Both lie in a country forest-covered and swampy. The very soil, with its decomposing granite base, and its deep alluvial surface is similar. Both people subsist principally upon yams, plantains, and other fruits. It might, therefore, have been taken for granted that each of the branches of this kindred people would have been equally accessible to outward influences, and that as the Fanti has proved impervious to the civilizing influence of his white neighbour, so the Ashanti would have proved impervious to the Moorish tribes upon his frontier. When, however, the British troops crossed the Adansi Hills, they found that they were in a country where everything showed signs of Moorish influence. The architecture, the curious reliefs which ornamented the walls of every hut of the smallest pretension; the articles of furniture; everything, in fact, bore signs of Moorish influence. And yet the actual contact with the Moors can have been but slight; certainly no greater, probably much less, than that of the Fantis with the English. There was a sort of Moorish colony at Kúmasi, but there is reason to believe that it was in Kúmasi only. Even in point of trade it is probable that the trade of Ashanti with its Moorish neighbours was less than with the whites at Elmina and Cape Coast. And yet Ashanti bore everywhere traces of Moorish influence. In art it was infinitely more advanced than any negro kingdom or country hitherto visited by white men, but its art was all Moorish. This immense advance in civilization by the Ashantis while the Fantis were standing still, can only be explained upon the theory that the Moor has more affinity for the negro than has the Anglo-Saxon. In other climes, among other peoples, the Anglo-Saxon is the best agent of civilization that the world has ever seen, but with the negro he fails. I have shown that, when crossed, his blood dies out in a generation or two, and in this respect he has less affinity for the negro than have the people of Southern Europe. The half-caste Spaniard, Portuguese, or Italian is notoriously a far superior type to the offspring of the Anglo-Saxon and the negress. Even the French is superior to the English mulatto.

It is evident by parity of reasoning and by what we see in Ashanti, that the Moor would assimilate far more readily with the negro than does the Spaniard or Portuguese. The negro does not feel that the copper coloured Moor is a being so far removed from himself as is the pallid Englishman he sees upon the coast. The step between negro savagery and Moorish semi-civilization is not so great. The white man deals in prodigies: he has his fire ships and his breech-loading guns, he has his tight-fitting clothes, and his high hat. Hence, while the negro will copy the semi-civilization of the Moor, he only wonders at the civilization of the Englishman.

From our utter and complete failure to civilize the Fanti, from the inability indeed of nineteen out of every twenty Englishmen even to exist upon the coast, I am convinced that we must, sooner or later, abandon our costly and useless protectorate. The trade which we carry on there is of very slight importance. The quantity of oil produced is small, and there is no other article of export save gold. The oil trade, and indeed other trades, can, as is proved in the trading stations at the Bight of Benin, be carried on equally well without the presence of a single soldier or the possession of a single foot of ground. That Africa may some day become civilized, or at any rate partly civilized, I believe, but the instance of Ashanti proves to us that the civilizing agent must be the Moor, not the Anglo-Saxon. Already he is extending his dominion southwards with rapid strides, and, as we see, his influence is reaching where his arms have not yet arrived. Wherever the Moor carries his arms there he plants his religion. The diffusion of Muhammadanism over Ashanti and Fanti land would be an unmixed blessing. We, with our scruples, force no one into the Christian fold. The Muhammadan has no such hesitation. Before his sword the fetish rights, the abomination of heathen sacrifices would vanish. If Africa is ever to be civilized it must be by the Moors. We have failed utterly, and must from the nature of things

continue to fail utterly at present. Some day we may succeed. It will be far in the distance for, as a preliminary step, Africa must first go through the civilizing effects of the ascendancy of Moorish ideas, of Moorish custom and art, and of the Muhammadan religion. When he has made that progress, it is possible, although I think hardly probable, that the negro may be fitted for making another step forward, and for receiving European civilization and the Christian religion. The advance which we have been striving to get him to make is too great. The change from nakedness to a frock coat, from fetish worship to Christianity, from a canoe to a steamboat, is too much for him. English people are greatly deceived at home by missionary statements of the number of children attending schools and the number of communicants at church, into the belief that the people are fast becoming christianized and educated. How far this is from the truth may be judged by the documents signed on the 14th of November last, by all the chiefs and captains, that is to say, by all the leading Fantis at Cape Coast, giving over to Sir Garnet Wolseley the right of impressing the male population. Of the twenty-four signatures appended, one was written by the English judge, one by Mr. Thompson, the interpreter, all the rest, without exception, made their mark X, and these were the leading Fantis of Cape Coast! It is possible that we shall still continue to struggle for the impossible, that we shall waste millions more money and hundreds more lives, but we shall, I am convinced, have at last to come to the conclusion that the Anglo-Saxon cannot extend his civilization among negroes under the tropics. Then, and not till then, will there be hopes for the Fanti. The heavy blow which we have struck at the power of Ashanti will in itself bring the Fanti nearer to his emancipation from fetishism and barbarism. The power of Ashanti stood like a wall against the southward movements of the Moors. They have already prepared their way in Ashanti by the introduction of their arts, it is probable that they will ere long follow with their arms, and strike a death blow to the hideous cruelties of fetish worship. Ashanti once Muhammadan, Fanti-land will not long remain in barbarism and heathendom.

G. A. HENTY.

EMIGRATION.

THERE is no subject on which misapprehension and fallacies are more easily propagated, and with more fatal success, than in reference to the state and resources of the several countries and colonies which are willing to receive emigrants. In proof of this assertion it is only necessary to call attention to the case of those deluded agricultural labourers, who were induced, in 1872, to emigrate from Warwickshire to Brazil, in the hope of improving their condition. The prospects held out to them were most encouraging and most tempting to labourers who could not maintain themselves and their families on 12*s.* a week. They were assured that in addition to a grant of a plot of land, a paternal government would, on their arrival, be most solicitous for their individual comfort. They would live on "beef, veal, lamb, fowls, ducks," and an unlimited supply of vegetables. Beef was said to cost from 2½*d.* to 4½*d.* per lb., the climate was most salubrious, and the soil literally teeming with wealth.

Immediately after their arrival in this "land of promise" private letters proved that they had been grossly misled, that they could not procure even the common necessaries of life, and that their condition was far worse than in their native villages. Small-pox committed ravages amongst them, and in a few months' time all who could escape from the country returned to England to find themselves worse off than when they left it.

Our object in referring to this disastrous undertaking is not to discourage emigration, but rather to point out how necessary it is for all who desire to emigrate to act with care and deliberation, and to apply to the most authentic sources for information, which is easily accessible. Before referring, however, to the magnificent field open in our colonies to all those who cannot find employment at home, it will not be uninteresting to refer to the causes which have resulted in past years in regular and exceptional rates of emigration.

Emigration is governed by the ordinary laws of supply and demand. In England, a country of circumscribed area, the regular annual emigration is consequently traceable to the great increase of population, and to the want of a corresponding increase in the means of obtaining a living. Exceptional emigration, such as that which existed during 1847 and the six following years, and again in 1863 and 1872, is simply the result of persons searching for cheapness or employment according to the tide of human necessities. To such causes we are indebted to the introduction into this country, during the reign of King Edward III., of weavers and manufacturers of woollen cloths from Flanders, as also to the immigration to this country of upwards of 50,000 French after the revocation of the edict of Nantes. But these are matters of history, and passing them by with a simple notice, it will be more to our present purpose to review the causes of those exceptional rates which have occurred within the memory of the present generation.

We find that between the years 1847 and 1854 inclusive no less than 2,444,800 emigrants left the shores of Great Britain, or at the rate of nearly 100 persons a day. The chief cause of that immense exodus was the awful famine in Ireland; and the departure of so many souls was a most fortunate circumstance of that disaster, for it improved the condition of those left behind; it arrested crime and agrarian outrage, and it relieved the country at large of a starving population which found means of subsistence in a new land. In the three following years 1855-57, there was a decrease in the annual number of emigrants which amounted to 566,236. The cause of this decrease is easily accounted for by the Russian War, and the consequent demand for recruits both in the army and navy. In 1857 and 1858 the numbers were again very low, viz., 234,414, and this is satisfactorily explained by the mutinies in India having again created a demand for recruits, and also by the commercial crisis in America, and the consequent cessation of a demand for labour in that country. In the four years between 1859 and 1862 inclusive, 500,000 emigrants left England, many of whom were attracted to Australia by the large gold discoveries in the colony of Victoria. 1863 was again a remarkable year in the annals of emigration, for no less than 223,758 persons left this country, a number not far

short of the annual average number which left during the Irish famine. Driven from England by the wide-spread distress in our manufacturing districts, thousands were attracted to America by the high wages ruling there, and by the bounties offered to recruits required by the struggle for supremacy between the Northern and Southern States. No less than 146,000 persons emigrated from England to America in that year.

During the eight years between 1864 and 1871 inclusive, there has been a steady emigration from this country, averaging some 220,000 souls a-year, chiefly to America; and in consequence of the high price of provisions, and the strikes which have occurred amongst the labouring, artisan, and mining population of England, private individuals and public societies have emulated each other in collecting information and devising schemes for assisting those in distress to leave this country for more congenial shores. In these circumstances it needed no prophet to foretell that in the year 1872, a number far in excess of recent averages would emigrate to other lands, and I am now in a position to state that it exceeded the average emigration of the last seventeen years by no less than 109,971. 295,213 emigrants left the United Kingdom in that year, of whom, however, 79,023 were foreigners. It may be here noticed that the emigration of foreigners through this country is annually increasing, and that before 1864 it was inconsiderable.

It will be to the point to enquire now how the different English colonies promote emigration. Much has been said in regard to the necessity for Government interference, and many persons think that the Home Government has power to allot lands in the colonies for emigration purposes. But this is quite a mistake, for when representative institutions were granted to the colonies of the Australasian group the control of all lands was handed over to the Local Legislatures; and when Canada and its provinces were united into one great Dominion, the Lands, Woods, and Forests of the provinces were handed over to the control of the Government of the Dominion. The only means, therefore, by which emigration to our distant possessions can be promoted, is by the action of the Colonial Legislatures; and I will now proceed to review the inducements which they hold out, merely observing in passing that, looking to the proximity of the United States and to the liberal terms on which an emigrant can obtain land in America, it is clearly impossible that the bulk of emigration can be attracted to our rich and fertile colonies unless equally liberal terms are offered by them, or their greater advantages are more truly known.

The assistance given by Canada consists in an allowance at the rate of $10 per statute adult towards the passage of such emigrants who may be approved by the agent of the Dominion in this country.

Free emigration to New South Wales and Western Australia is for the present suspended. It may here be remarked that Western Australia comprises an area of 626,111,323 acres, out of which only 51,724 are cultivated.

Free passages are not granted to South Australia, but approved persons, paying the whole cost of their passages, are granted land warrants, exchangeable on arrival in the colony for land orders of the value of 20*l.* for every adult over twelve years of age, and 10*l.* for every child under that age. In this colony there are still 270,000 square miles open for settlement; and a trans-continental railway 2000 miles in length, which will open up millions of acres of land, is in course of construction. It is stated that there is not a single able-bodied pauper in the colony, and that the Government proposes to spend some 35,000*l.* in the introduction of fresh population. Emigration to Victoria at the cost of public funds is suspended.

As regards Queensland, free passages are granted to female domestic servants, and to approved emigrants of the farming class; but those granted free passages are not entitled to grants of land in the same manner as those who receive assistance and land orders on the principle adopted in South Australia.

Assisted passages are now granted by New Zealand to navvies, general farm labourers, ploughmen, gardeners, and others; and free passages are offered to single female domestic servants and dairymaids, between the ages of fifteen and thirty-five.

In all the Australian colonies it may be said, without entering into details, that wages range from 5*s.* 6*d.* a day for a common labourer, to 9*s.* 6*d.* or 10*s.* for a skilled mechanic; that a leg of mutton, which costs here 7*s.* or 8*s.*, may be bought there for 3*s.*, and that with the exception of house-rent which is from 6*s.* to 8*s.* a week for the labouring classes, money will bring far more than in England. As a proof of the welfare of the general community, it need only be stated that the consumption of what we consider luxuries is comparatively five times as great in Australia as in England.

The magnificent dominion of Canada and the prospects which it holds out to the emigrant deserve a separate paragraph.

The immigrant arrivals in that country have of late years been quite insufficient to satisfy one-third of the labour demands, as the immense agricultural and other resources of the dominion are practically unlimited. There is no fear of causing a glut in the Canadian labour market. Food is plentiful and cheap—bread being little over a penny a pound; meat, 4*d.* to 6*d.*; potatoes, 1*s.* to 2*s.* a bushel; milk, 2½*d.* a quart; and other articles in proportion. The inducements, however, to emigrate to Canada, as well as to Australia, are not simply good wages and good living in a rich country with a fine climate, but the confident prospect which the poorest may have of becoming a possessor of the soil, earning competence for himself, and comfortably settling his children. The fullest information in regard to Canada and Australia can be obtained on application to the several agents who represent those colonies in this country.

My object in writing this paper is to warn British subjects from risking their health and independence for inadequate remuneration in a country like Brazil, which possesses a trying climate, and is inhabited by people of different habits and ideas to their own, and to point out to them the magnificent opening afforded by our colonies. Though the distance from home is further, and the passage expenses to Australia may be greater, there are works to be undertaken and land to be settled which can absorb for years to come the surplus population of the mother country. It is impossible to conceive the amount of wealth and popula-

tion that will ultimately be gathered in these vast and fertile regions. At a moment when our population is hurrying in great numbers to America, where, by the way, the land available for settlement must be well nigh exhausted, publicity should be given to such facts as I have stated, in order that would-be emigrants might reflect on the superior attractions of our noble colonies, where there is peace, abundance, freedom in civil and religious matters, and a greater amount of comfort amongst the labouring classes than ever can be attained in this country.

WILLIAM ROBINSON, F.R.G.S.

IMPRESSIONS OF JAMAICA.

CHAPTER I.—GETTING THERE.

LAND—though it be no better than a guano heap, such as is the Island of Sombrero, leased by the British Government to a fertilizing company—is lovely to look upon after a long voyage, especially when we are not going ashore there, but know it is merely a sign-board, so to speak, hung out in front of a hostelry. We had left London on New Year's Day, 1866; and on the second evening of that January, memorable at home for its extreme rigour and for the terrible losses at sea caused by the gales that blew round our coast, the 'Atrato' put out from Southampton Water. Such a hurricane as we encountered outside the Needles had not visited the shores of England for nine years. It was not till the third day of our departure that, still beating off Cornwall, we managed with the greatest difficulty to send our pilot ashore. All who were on board that ship, on her voyage of official enquiry into the true character, motive, and circumstances of the negro rising in 1865, have good cause to know that we were nearly given up for lost—that one gale in which the iron-freighted 'London' foundered was then believed to have sent us likewise to the bottom; that an unconsidered spar, thrown overboard from our vessel, with the name 'Atrato' branded upon it, was picked up on the Welsh coast, and was regarded despairingly as a token of our fate; that the insurance of the cargo was multiplied six or eight-fold by the underwriters in one morning; and that the letters which some of us received from home, by the mail that followed us out to Jamaica, seemed to have been written in an agony of doubt whether they would ever meet our living eyes. There was no telegraph, so recently as the time I speak of, between the West Indies and England; and the 'Atrato' herself carried back from St. Thomas to Southampton the tidings of her safety.

The rapid passage out of one climate into another is an experience which no familiarity with steam travelling can ever make contemptible by depriving it of its triumphant or despondent magic, as the case may be. To-day, you are shivering in the gelid fog of an English January; the next, as you gaze through dazzling sunshine at some orange-covered island of the Azores, whence a little fleet of rowing-boats has put out to meet you, with tempting cargoes of fresh-plucked fruit, you find that an awning spread over the ship's quarter-deck scarcely suffices to veil the intense light of the sky; and, lo and behold, all the officers have sported white trousers. The novelty would have seemed to us the more curious and remarkable if we could then have known that on this very 10th day of January every town in England was blocked up with snow, and the drifts on the moors and wolds were deep enough to bury horse and man. From the day marked by white duck, when the glass stood at 76° in the shade, wherever there *was* shade for it to stand in, the temperature rose and rose day by day, almost hour by hour; but a delicious breeze never failed, and when, from having been against us so far, it suddenly came round to our side—when, in fact, we were fairly within the influence of the trade-winds—it was not hard to imagine ourselves in the tropics already. An interest in the distance the 'Atrato' made each day seemed to quicken with the growing heat. I wonder whether that rack or driftwood, "ragged and brown," which is so plentiful in the broad and ever-flowing Gulf-Stream, cheered the hearts of the old discoverers as they voyaged in this track, and looked and longed for land. Day after day we saw it—*we*, who knew our distance from any coast, and yet could *not* see it without thinking of the shore it had fringed or clothed. Two successive Sundays on board the 'Atrato' brought together in the saloon nearly all the passengers and as many of the officers, crew, and engineers as could be spared from working the ship, to offer up their common prayers and supplications to the Eternal Power that alone spreadeth out the heavens, and ruleth the raging of the sea; that hath compassed the waters with bounds until day and night come to an end. Surely there is something very impressive in the adaptation of our forms of prayer to the different conditions of existence on land and on sea. The service of the Church was read by Captain Jellicoe, as there did not happen to be an ordained clergyman on board. Sunset and sunrise, bright starlight, and the glory of noontide, how often these were watched by silent groups on the deck of the 'Atrato' it is needless to say. But it will be long indeed ere I forget the time so quietly varied.

At last came one White Monday, when, after the sky had been brighter, the sun more powerful, and the cool breeze astern sweeter and more refreshing than ever—when we had hung for hours listlessly gazing in the shade of the white canvas canopy at shoals, or one should rather say flocks, of flying fish, like wet swallows, coloured with prismatic light on their gracefully curved backs, and whiter than the swan's neck below their dragon-fly wings—when summoned by the bugler's lusty performance of "The Roast Beef of Old England" to the dinner table, we found that festive board more festively arrayed than usual—when, in short, the last day on board the 'Atrato' being at hand, the last dinner-party was signalised by the toast of the captain's health, the proposer being Baron Magnus, Prussian Ambassador to Mexico. The "first awful night and following stormy days" of our run to St. Thomas were duly noted in his Excellency's eloquent retrospect, by way of praise to Captain Jellicoe's seamanship, as well as of contrast to the gaiety that had followed. The Baron's speech, hearty and polished, struck the right note, and was followed by cheers for the brave sailor, who acknowledged the kindness in a few frank, well-chosen words; and next day, sure enough, the 'Atrato' was in the harbour of St. Thomas.

Being on our way to Jamaica it is not unprofitable

to notice here that this island, one of the three belonging to Denmark, is a free port; that the cultivation of the soil has in a great measure given way to trade; that the harbour is always full of merchant-ships; that land is rapidly rising in value, wherever a warehouse can be beneficially built; and that, as an instance of the increasing prosperity of the place, some short time before that spring of 1866, a resident who had bought a bit of ground for $3000 sold a mere slip of it, on the edge of the harbour, for nearly twice that sum.

The harbour in question is landlocked, and was notoriously unhealthy, till a canal was cut which brought a current through the once stagnant shark-pond, and as a matter of course improved the sanitary condition of the port and town of Charlotte Amelia. This is the coaling-station of the Royal Steam Packet Company; and it was here that the 'Atrato' debarked her passengers, some of whom were going to Santa Cruz, some to Colon by the steamer 'Solent,' some to Havaña by the 'Eider,' and some to Jamaica by the 'Conway.' The greater number of this division, to which I belonged, went ashore for an hour or two, and made purchases of bananas, cheap and good cigars, plantain-leaf fans, linen shoes, Panama hats, and pale yellow suits of some superlative gossamer-like material, arrayed in which we looked like perambulating lemon ices. On returning on board the 'Atrato,' we found her now disordered deck crowded with negro women, who offered for sale articles inferior to those we had purchased ashore, and at double the prices. The passengers for Jamaica by the 'Conway' numbered only seventeen, and these, with two young Haytiens whom we were to put ashore at Jacmel, took leave of St. Thomas and the 'Atrato,' at daybreak next morning. Our little steamer was manned principally if not wholly by a black crew, with a black boatswain of considerable intelligence and great good humour. The officers, of course, were all English, including properly under that term some who were Scotch; for the Royal Mail Steam Packet Company was at first a Scottish enterprise; and the national character and associations cling to it still. On the second morning of our run from St. Thomas, quitting my berth as usual before daybreak, I found that we were approaching the island of Hayti, the red dawn casting a glow over the sea in our wake and over the strange land before us. We had on the previous day coasted the magnificent panorama of the Spanish island of Puerto Rico. An indescribably pure carmine was the colour of the sun as it rose above the many-tinted waters of the Caribbean Sea. Above the orb hung golden clouds, embossed on a golden sky of paler tint; and the island was flushed with the warmth, which spread a lurid canopy over the fantastic tops of the peaked hills, and branded the fierce faces of the rocks with seams and scars of fire. When these appearances had subsided, and the red glow of sunrise had given place to the white heat of a tropical day, a very bright and truthful sketch in water-colours was made from the deck of the 'Conway' by Mrs. Russell Gurney, the only lady of our party on board the Jamaica steamer. Nor were the productions of her skilful hand the sole memorials of that passage among the islands of the west which she was able to preserve. Nature as well as Art contributed to her stock of interesting remembrances; and on the last day a flying-fish, taking a too ambitious flight, fell exhausted on the ship's deck, so that, being captured, it was presented to the lady by one of the officers. Next morning, we were in Kingston Harbour.

Whatever may have been said to the disparagement of Kingston, it is a decent place enough, if only for the facilities of getting out of it, and for the first impressions of coming in. I for one shall speak of it with toleration, if not with love. I liked the look of the town when I saw it on that gloriously bright and amazingly hot 20th day of January from the deck of the little steamer. We had all been prepared for something pleasant by the beauty of the coast scenery, culminating in the magnificence of the harbour, and of the gorgeous colours of the sea, just at its entrance. So near is a vessel obliged to pass on rounding the point of land on which is built Port Royal, that it is customary to fling the tribute of one penny ashore. I shied my bronze with so jubilant a force that the coin was lost to sight, and, as I feared, might have become to memory dear by having broken a window of Admiralty House. An officer whom I am so happy as to call my friend, Sir Leopold M'Clintock, was then commodore at the station, and his flag was flying over the roof of the building I have mentioned. I did not break his glass, nor did he find my penny. As soon as possible, after reaching Kingston, I went to pay him a visit, and when we had taken up some old threads of well-remembered cruisings in the Baltic and the North Sea, in the 'Aurora,' last of our wooden frigates—she was here in Kingston Harbour, strangely enough—the great navigator told me more in half an hour about the physical geography and historical association of the spot on which I found him, than I could learn in a week from any number of printed books. But let me not neglect my present purpose, which is to tell the reader something of my impressions of Jamaica, and of Kingston first and foremost. We were long enough steaming up the seven miles of water from Port Royal to observe the most trifling objects among all that was so new and strange to most of us. The dark, clustering foliage of the mangrove-bushes, covering the coral islets, and dipping their branches into the water, for oysters and limpets to fasten on and grow; the tall graceful cocoa-nut trees, rustling their plumes in the gentle stir of the soft sea-breeze; the change from blue and amethyst to a pale clear emerald tint in the tranquil shallows near shore; the various birds that few of us could tell the names of, and most conspicuous among them the man-of-war bird, an immense black variety of the sea-gull, often measuring ten or eleven feet from tip to tip of his pinions, and with a body which, though of great size, seems small in proportion to the marvellous reach of his flight. All these things and many more forced themselves on our notice, impatient as one might have been to land. And now, on the point of accomplishing this long desired act, I leave for awhile the account of experiences on "the Land of Streams."

GODFREY TURNER.

(To be continued.)

Reviews.

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JOURNAL OF THE ROYAL GEOGRAPHICAL SOCIETY.—1873.

THE first paper in the *Journal* for 1873 contains an interesting account of the Garo Hills, by Major Godwin Austen, with a geological appendix. The next paper, on a projected railway route over the Andes, from the Argentine Republic to Chile, is by Mr. R. Crawford. In compliance with a request of his employers that he would, while engaged upon surveys for a proposed railway from Buenos Ayres to Chile, collect all such information as would be of interest to the Geographical Society, Mr. Crawford forwarded the results of his observations, with a carefully prepared map. He has added some important geographical knowledge to previously existing maps; especially with regard to the Rio Grande, a tributary of the Colorado. Mr. C. W. Lawrence, of the Legation in Japan, contributes an account of a journey in the interior of that interesting country from Kiôto to Yedo, by the Nakasendo road. The journey of Sir Frederic Goldsmid, from Bandar Abbas in the Persian Gulf, through Sistan, to Mash-had, the capital of Khurasan, in 1872, is described in a very interesting paper; while Sir Henry Rawlinson furnishes a valuable essay on the ancient history and comparative geography of this part of the east. The narrative of a journey through Western Mongolia, from China to Siberia, by Mr. Ney Elias, is the record of a remarkable geographical achievement, which obtained for its author the Gold Medal of the Royal Geographical Society. The journal contains two papers bearing on Arctic research. The most important is Mr. Major's conclusive proof of the authenticity of the voyages of the Zeni in the 14th century, with a determination of the site of the lost colony of Greenland. The other is a review of recent discoveries east of Spitzbergen, and of attempts to penetrate the Polar pack on the Spitzbergen meridian by Mr. Clements Markham. Mr. Thomson contributes notes of a journey in Southern Formosa, and Captain Stevens has a report on the country around Aden, including an excursion into the territory of the Howshabi tribe. Mr. Howorth's paper on the recent elevations of the earth's surface in the northern circumpolar region is a careful and laborious attempt to record, with some degree of accuracy, the existing state of our knowledge with reference to the upheaval and subsidence of Arctic lands; and is a most welcome contribution to our knowledge of physical geography. Major Wilson, of the Topographical Depôt of the War Office, furnishes a comprehensive account of the recent surveys in Sinai and Palestine, and especially of the trigonometrical survey of Palestine commenced in 1871. The volume opens with Sir Henry Rawlinson's anniversary address, delivered on May 26th, 1873; and containing, with the usual general review of the progress of geography, an admirable statement of the achievements of recent Arctic explorers, and a report on Sir Henry's own efforts to further the good cause.

THE MADEIRA AND AMAZON.*

THE accomplished German engineers, Joseph and Franz Keller, were charged by the Brazilian Government, in 1867, to explore the rapids of the river Madeira, which obstruct the navigation between Brazil and Bolivia, and to report upon the best means of improving this important line of fluvial communication. They reached Manaos, at the mouth of the Rio Negro, by steamer, but many official difficulties retarded their further progress. At last, in May, 1868, the Kellers continued their voyage in a canoe, in company with a Bolivian merchant, and with provisions for four months. On the 9th of June they reached Borba, 25 leagues above the mouth of the Madeira; and thence continued the voyage, with seventy Moxos Indians from the Bolivian Missions on the Mamoré. Higher up, at Crato, there is a cattle farm, on meadows the extent of which are unknown, but which probably extend to the river Beni. This is now a flourishing establishment, the cattle having been brought from Bolivia in launches or large canoes along the rapids of the Madeira, by Senhor Antonio de Barros Cardozo, a Brazilian citizen, who has thus conferred a great boon on the valley of the Amazons, where fresh meat is so scarce. Here the river is 1000 yards in width, and the climate is described, by the Kellers, as excellent. Between Crato and the mouth of the Madeira there are many India-rubber gatherers, and hunters of turtles. In September thousands of these turtles congregate on the island of Mutuns and on the beach called Tamanduá, and deposit their eggs. India-rubber gatherers and fishermen meet every year to collect the eggs for making butter, and as there are 2000 jars of butter made on the shore, each jar taking about 2000 eggs, there must be an annual destruction of 4,000,000 turtles' eggs.

The Kellers arrived at the first rapid of San Antonio on the 16th of July. At this point it is necessary to unload the canoes, and transport everything 500 yards over the rocks on the left bank. It took them five weeks to pass the other sixteen rapids; reaching the uppermost, at Guajará, on the 24th of August. Above the falls the character of the river changes entirely. The inclination becomes perfectly regular, and very slight. On the 1st of September, the travellers arrived at the junction of the Itenez and Mamoré, which are here 325 and 650 yards wide respectively; the waters of the Itenez being bright green, and of the Mamoré a yellow tint. In the rapids the vegetation is rich and luxurious, but above them it becomes stunted, a zone of low shrubs merging into prairies. Here, on the banks of the Mamoré, is the estate of the distinguished Brazilian Antonio de Barros Cardozo, who has lived in Bolivia for fifteen years, and was one of the first, in modern times, to ascend the Madeira in large craft. A few leagues above his estate is the town of Exaltacion, the first Bolivian settlement on the Mamoré. Thence Franz Keller proceeded to Trinidad, the capital of the Department of

* 1. *Vom Amazonas und Madeira.* Skizzen und beschreibangen aus dem tagebache einer explorationsreise von Franz Keller-Leuzinger (Stuttgart, 1874).

2. *Report of José and Francisco Keller*, made to the Imperial Government of Brazil, and published in the *Government Relatorio* of 1870. Translated from the Portuguese by George Earl Church (London, 1873).

Beni, where he was furnished with five canoes and rowers to continue his investigations.

The Department of Beni is the portion of Bolivia, in the valley of the Amazon, to the eastward of the Andes, which is watered by the rivers Beni and Mamoré. The total indigenous population is estimated at about 30,000 souls, distributed in fifteen missions or towns. The four most important are Trinidad, Loreto, San Ignacio, and San Xavier, all inhabited by Moxos Indians. The eleven other missions are formed by the Canicharas, Itonawas, Baures, Cayubabas, Mobimas, and Maropas Indians. But these are all branches of the Moxos, according to Hervas, and the older missionaries. In going up the river, the Kellers took a series of astronomical and hypsometrical observations. In descending they made a detailed plan of the river, and some measurements of the cubic volume of the rivers Mamoré, Beni, and Madeira. They returned to Pará in December, and reached Rio de Janeiro on January the 4th, 1869, after an absence of fourteen months.

The results of their expedition are extremely valuable, and are given in six sections—on the climate and geology, on astronomical observations, on hypsometrical measurements, on projects for improving the route, on statistical data, and on comparative calculations of freights by the different routes.

For the last ten years there has existed a small traffic on the Madeira, by canoes, between the Brazilian town of Serpa on the Amazon, and the missions on the Mamoré, the influence of which extends from Santa Cruz de la Sierra to Pará. In 1868 from fifty to sixty canoes came down the Madeira from Bolivia, with an average freight of 8750 pounds, so that the total weight of goods transported was 700 tons. The rapids extend over 70 leagues between San Antonio and Guajará, for the passage of which there are three plans. One is an inclined plane, the second is the opening of a canal on the right bank, and the third is the construction of a railway about 50 leagues in length. Of these the Kellers consider that the railway would be the most economical. On the lower Madeira the chief article of export is the India-rubber or caoutchouc, the present annual export of which, from the whole Amazon Valley, is about 5000 tons, more than half coming from the Madeira. The trees flourish best on the *igapó*, or recent alluvium, which is inundated during the time of flood in the rivers. It is supposed that the annual inundation is necessary for the production of the milk. The Bolivians have shown extraordinary enterprise in conveying cargoes of their quinine-yielding Calisaya bark from the Andes, down the Madeira and Amazon, and across the Atlantic to Liverpool. The freight of a load of 250 pounds of bark to the Pacific is $50, while the freight down the Amazon to Pará is only $10. At present a new line of steamers runs up and down the Madeira as far as the first rapid at San Antonio.

The Kellers recommend that cotton should be planted, on a large scale, in the Bolivian Department of Beni, and that machinery should be introduced to clean and weave it: that new cattle estates should be formed on the immense prairies; and that the roads from the Andes should be improved. It appears that, within the last three years, 2000 Bolivians have descended the rapids of the Madeira to find employment on the banks of the lower river; and it seems clear that Colonel Church's view is the right one, and that a railway round the rapids would have an immediate and permanent effect in opening a great trade between Bolivia and the Atlantic.

The report of the brothers Keller is full of valuable information, and Colonel Church has added to the debt of gratitude which geographers already owe to this indefatigable explorer, by presenting it to English readers in a convenient form. The German volume of Franz Keller, published at Stuttgart, is magnificently got up, and is illustrated by a number of beautiful engravings, which are the author's own work. South America, and especially the Amazon Valley, has been fortunate in her explorers; but few have exceeded the Kellers in the value of their observations in their own special branch of knowledge, and in the conscientious carefulness of their survey.

SOUTH BY WEST.*

THE substance of this book is probably already known to many of our readers, as a series of papers in *Good Words*, by Miss Kingsley. It appears in its new form anonymously. We cannot help thinking that it was misplaced modesty to withdraw the name, for now that we are so overrun with books of travel, when every one who leaves his home for a few months, or even weeks, thinks it necessary to publish his impressions—utterly foolish and erroneous though they may often be—it requires some strong inducement to overcome the distaste that one feels for this kind of literature. None could be stronger than the name of Kingsley, whether it be associated in our minds with the primeval forests and tropical scenes of *Westward Ho!* and *At Last*, or with the less striking, but scarcely less lovely, bits of fir-wood and heath, or moorland scenery in the *Prose Idylls?* Such true love and appreciation of nature, with the power of describing it, may be expected to be more or less hereditary, unless indeed, we are to believe nothing of the "hereditary genius" theory, of which we hear so much at present. But perhaps the authoress was wise in wishing to stand on her own merits, without owing anything to the lustre of her father's name, and she has certainly proved her capacity for doing so in the amusing pages before us.

One characteristic of this work is the natural, straightforward way in which it is written. There is never the slightest attempt at "tall talk." We owe her one debt of gratitude for sparing us the passage across the Atlantic, with the eternal description of porpoises and flying fish which invariably accompany the traveller.

In a page and a half we find the steamer anchored inside New York harbour, where "we were soon summoned below to the saloon, to be inspected by the doctor; and, crowding in, sat positively suffocating for some time, no doctor appearing; till at last a voice at the door announced, 'You have been inspected, and the doctor has passed you all,' and out we trooped again. But how it was managed—whether the doctor

* *South by West; or, Winter in the Rocky Mountains, and Spring in Mexico.* Edited (with a Preface) by the Rev. Charles Kingsley, F.L.S., F.G.S., &c. London (W. Isbister & Co.), 1874.

marked us down as we went in, or took a telescopic view of us through the windows—no one ever found out."

She takes us also rapidly through the well-known scenes of New York, Niagara, and West Point. At Niagara she was most impressed with the "extreme beauty. There was nothing horrible—hardly awful. The water as it fell looked so soft. I tried to think of what it reminded me most in substance, and all I could think of was whipped cream!—a sad bathos, but true."

At West Point the thing "that sent a thrill through one to one's very finger-ends, was a small conical shot, not 12 inches long. It was 'the shot' that opened the war, the one fired on April the 12th, 1861, on Fort Sumter. Opposite it was the return shot from the North, a round ball."

But Miss Kingsley's real adventures began when she left her English friends at Baltimore, on her way West to spend the winter with her brother in Colorado. Most graphic is her description of this winter at the Colorado Springs. The first weeks were spent in a "wooden shanty, 16 feet by 12, ordered on Thursday and finished on Saturday." By the side was her brother's tent, which served as the general sitting-room by day, and as his bed-room at night. Rather queer quarters for an English young lady to find herself in, especially as occasionally her brother had to leave her to go up to Denver on business; but the worst evil that she met with was a severe "scare," from prairie wolves one night.

However, they soon moved into a more solid house, where their quarters were luxurious compared with those they had left, it being a very minor evil to find, on getting up in the morning, a little snow-drift on the floor, nearly 2 inches thick, which had drifted in through the cracks in the door, and key-hole! Whatever the weather was all through that winter—and the cold was often intense—they had to go for their meals to the restaurant half-a-mile off, their means of cooking being limited at home, where "an invaluable tin dipper served for saucepan, glass, jug, and every use imaginable." Miss Kingsley thus describes her life:—

"I get up at 7 A.M., in the cold frosty air. M. comes in and lights the stove; heats some water; and by 8 we are ready for a walk to the restaurant, with a fine appetite for breakfast . . . . . Then, if there is time, we take a stroll, and look for reeds and stones. There are all sorts of stones and crystals to be found here . . . . . At 9 work begins, and I attend to my household duties—sweeping the rooms, &c., and then am ready to help M. in his work. At 12.30 the train comes in, and we go down to dinner. At 5.30 it is almost dark; supper is at 6, and then we shut up our tent and spend a cosy evening."

This was their life in the tent: later on we hear of evening dissipations in the shape of house-warmings, "surprise parties," &c. Our authoress occasionally diversified her proceedings by spending a morning at the wash-tub; for finding that washing was done very badly at 10*s.* the dozen, she wisely determined to attempt it herself. She says, that "after scorching a few collars, getting into a state of black despair with the starch, rubbing the skin off my knuckles with the rubber, and burning my hands with the irons, I have turned into quite a good laundress."

But though this was the usual life, Miss Kingsley and her brother found time for many and various excursions, going long expeditions in the roughest of carriages with the most unmanageable of mules. The grandeur and beauty of the surrounding country must be very striking. Miss Kingsley thus describes her first view of a cañon, one of those most curious natural formations with which the readers of Dr. Bell's *New Tracks of North America* are so familiar.

"The trail led up the bed of a little stream, then dry, which had sawn its way through walls of sandstone of every imaginable colour, from rich purple and crimson to salmon colour and white. The rocks were worn into the most fantastic shapes, battlements, castles and pillars, hundreds of feet high, sometimes almost closing in the path; then opening out on one side or the other into almost perpendicular hill-sides, covered with piñon, red and white cedar, Rocky Mountain pine, and *Pinus Douglassii*. . . . Then came a sudden twist; the rocks almost met over our heads, sandstone on one side, limestone on the other; and I touched both sides of the cañon at once, without stretching my arms to full length. It was the wildest scene—the towering rocks, black pines, and white snow. We looked such impertinent atomies, daring to venture into the heart of the mountains. I never heard such stillness before; it was quite oppressive; not a breath of wind, not a leaf stirring; no sound or sign of life, save ourselves and a solitary hawk wheeling round against the streak of blue sky we could see from our prison walls. For about a mile we went up, twisting and turning every twenty yards, so that, looking back, one could not imagine how one had got in, or would ever get out again."

At Christmas our authoress and her brother went down to Denver and comparative civilization for a week's "good time." There the skating rink was the great attraction; and many a performer at Prince's this season must echo the melancholy statement that "the fact of being a first-rate skater on ice does not help a bit on roller skates."

The inauguration of a reading-room, getting up a grand concert for the benefit of the funds of the said room, and attempting to keep school, helped to take up the remainder of the winter. And great must have been the loss to the colonists of the Colorado Springs when, in March, Miss Kingsley started with her friends, General and Mrs. P., for San Francisco, whence they intended to go down the Pacific to Manzanillo, and then to drive or get the best way they could across Mexico to Mexico City. "M" meanwhile and the engineering party were to go overland, no easy work or pleasant prospect. They were warned that "ha'ar is riz down south," which in western phraseology signified that as they had to pass through the Apache Indian country, they ran a chance of getting scalped. The rendezvous was to be Mexico City.

Till our party landed in Mexico, they had had plenty of discomfort and of roughing, but no real danger; but Mexico was in a state of revolution, and there was now the fear of their falling into the hands of the rebels, or if they escaped them, they ran the far greater risk of falling a prey to one of the many bands of robbers which infested the country. All they could do towards ensuring their safety was to keep a sharp look out, take all possible precautions, and press on as fast as possible. The ladies had been instructed on board the steamer in the mysteries of pistol practice, at any rate sufficiently to avoid shooting their companions. In one of her early letters our authoress speaks of trying to cure her uncontrollable dislike of firearms by keeping one of the rifles on her knee till it was wanted; she seems to have succeeded pretty well, as in Mexico we find her buckling on her full-sized Smith and Wesson revolver, and already beginning to look on it as her best friend. She tells us

that "a regular plan was arranged in case of an attack from robbers. We were all to fire at once, without giving them time to come near. 'Fire low and keep cool' were the orders. Then we ladies, if the ruffians did not run at once, were to throw ourselves on the floor of the carriage, and fire from under cover, while the gentlemen got out to fight." However, unfortunately for all these grand preparations, although the precaution was taken of hiding the arms, at one place where our party was changing horses, two or three "Pronunciados," or rebels, appeared on the scene, and requested permission to search the coach for arms, and as "expostulation was in vain and resistance out of the question, that party being but the outpost of another body," our travellers had the extreme mortification of seeing their five beloved rifles delivered over to the enemy: they had fortunately been able to hide their pistols under their clothes. They afterwards discovered that their party had been watched and followed from the coast, for that the leader of the revolution, Don Porfirio Diaz, had, unknown to them, been their fellow passenger on board the steamer. However, they succeeded in getting an escort to take them over the worst robber districts, and got safely across to Guadalajara, where they rested for a few days before resuming their tedious journey in springless carriages or ambulances, or broken down stage-coaches, across roads the very description of which is sufficient to make one's bones ache. In one place, Miss Kingsley says, "never have I felt the equal of that shaking: it was not mere stones or screes, but downright rocks, between which the wheels would stick, and the mules stop short; and then came a perfect hurricane of bad words, blows and stones, till we went up with a jerk that sent us flying." The nights were generally spent in bad inns, with worse beds. However, the greatest mishap that befell them was General P.'s nearly shooting two unfortunate gentlemen, whom in the darkness he had mistaken for robbers, and who had good naturedly ridden up to ask the party to spend the night at their house.

At last, one afternoon, two months after they had left the coast, they approached the far-famed city of Mexico:—

"The air was fragrant, like England in June, from damp grass and the roses which lined the ditches everywhere. Popocatapetl was in an ill-humour, and hid his head in clouds, so that we only saw the grand slope up towards the snow-peak: but even that was enough to give one an awful feeling of unknown size and height; for the great blue ghost carried one's eye up and up till it seemed to mingle with the very clouds themselves."

Our travellers were soon indulging in frantic congratulations at the sight of a railroad, which to them appeared the harbinger of law, order, and civilization.

Miss Kingsley certainly possesses a keen eye, and we should also add a cool head, for through all that journey, exciting as it must have been, she is making observations on the scenery of the country through which she is passing, and on the manners and customs of the inhabitants. If they rest for a few days she enters into the toils and pleasures of sight-seeing with as much zest as if that were her sole object. A statistical tone indeed pervades her writing, but we must remember that one of the objects of the journey was to get some idea of the possible traffic for a railroad. Whether it might not have been better to collect the statistics by themselves, and to publish them separately, perhaps in these very pages, which have already contained a paper on Mexico by the so-often-mentioned "M." of this book, remains an open question. At any rate the authoress herself thoroughly enjoys a snub which on one occasion their statistical thirst received—

"There was a large olive-yard and a mill where a good deal of olive oil is made—how much exactly we could not ascertain; for after General R. and Señor A. had both tried to find out how much an olive tree yielded, and had both failed signally, Mr. Y. 'went for,' the man, who completely shut him up by replying 'Oh, as much as God pleases.' We tried no more statistical questions after that."

Miss Kingsley's adventures were nearly over after their arrival at Mexico, where they were soon safely joined by the surveying party. Though even in these civilized parts it was not safe to take a ride out of the town without going fully armed, the robbers being so numerous.

Our authoress seems to have been deeply impressed with the extreme beauty of Mexico, and with the interest of its historical associations, and to have enjoyed the six weeks she spent there to the uttermost. Any one who, after reading her descriptions, takes an interest in Mexican life and habits, ought to visit the case of Mexican curiosities at the Christie collection in Victoria-street.

The journey from Mexico to Vera Cruz was performed without any adventure, and there our authoress and her friends embarked, and were heartily glad to find themselves once more safe on American soil, after nine months of such varied experiences as we should think have rarely fallen to the lot of an English young lady.

We have made no mention of two or three of the most amusing chapters in the book, and of several western stories which are supplied by the pen of "M.," but to quote passages from them would only spoil them; they must be read in the original to be properly appreciated.

The book is supplied with a map, excellent as far as it goes, but it is only intended to show the route pursued by our party; and with several very good illustrations, of which all we can say is that we wish there were a few more.

We close *South by West* with a feeling of regret, and with an earnest desire that if ever it should be our fate to travel in those parts, it might be with just such a companion as our authoress has proved herself in these pages.

CAMPAIGNING ON THE OXUS.*

ON laying down this book after perusal the reader will certainly arrive at the conclusion that the *New York Herald* is most fortunate in its selection of correspondents. Before the Khivan campaign commenced, the Russian Government issued an order forbidding any newspaper correspondents to accompany the forces. There was an old order also in existence (which was dug up for the author's special benefit), forbidding any Europeans to penetrate into Russian Turkistan. But neither these edicts, nor the horrors of the deserts, nor the fear

* Campaigning on the Oxus and the fall of Khiva. By J. A. MacGahan, correspondent of the *New York Herald*. (Sampson Low.) 1874.

of being picked off by roving Turkmen, was sufficient to deter Mr. MacGahan from his resolution to catch up General Kaufmann and the Tashkend column on their road to Khiva. And the way he carried out his design fairly earns our admiration as it did that of the Russian officers. The interest of his narrative is enhanced too by its modest style, and the welcome absence of "bookmaking." It is truly a description for the most part of what he himself saw and heard.

The author had intended to start from Kazala on the Lower Jaxartes, and follow the southward track of the Grand Duke Nicholas and his column across the desert. But here the first serious obstacle presented itself in the shape of a polite Russian captain, who could not take the responsibility of allowing the author to proceed on so dangerous a journey. This only resulted in his starting instead from Perovsky, which is considerably further up the Jaxartes, and where no opposition was offered to his movements. The Kirghiz or nomad tribes, among whom he was on the point of venturing, have the reputation of being robbers and murderers and hostile to Russians. But Mr. MacGahan with a discretion which we suppose is justified by its success, determined to throw himself entirely on their hospitality and generosity. It is true he was not wholly unprovided with means of defence.

"Being a man of peace, I went but lightly armed. A heavy double-barrelled English hunting rifle, a double-barrelled shot gun, both of which pieces were breech loading, an eighteen-shooter Winchester rifle, three heavy revolvers, and one ordinary muzzle-loading shot gun, throwing slugs, besides a few knives and sabres, formed a light and unpretentious equipment."

But these weapons were handed over to the host on entering his tent, and this proof of confidence seems to have gone straight to the Kirghiz heart. An additional means of insinuating himself into their good graces, *i.e.*, through the ladies of the establishment, was not neglected. Mr. MacGahan, we understand, is young, and this book certainly affords abundant proof that he is extremely susceptible of the influence of female charms. On one occasion indeed, when in the town of Khiva, this tender weakness, combined probably with a certain love of adventure, led him to explore, on a moonlight night, the harem buildings, where, after wandering through numerous courts, up staircases, through corridors, and dark, dismal rooms (in one of which he nearly dropped down a well 50 feet deep, and in another, almost set fire to a large heap of gunpowder stowed in a corner), he finally found himself in the midst of a circle of laughing damsels, with whom he took tea and sweetmeats with perfect equanimity. But we are anticipating.

The tract between the Jaxartes and the Irkibai Wells traversed by the author, though thinly covered with vegetation, is not sheer desert. Thin grass, brushwood, wild tulips, and other flowers grow in tolerable profusion, a fact which may probably be accounted for by the vicinity of the Jaxartes, and of the Yani-Daria, probably the old bed of the former. The Kirghiz nomads, alluded to above, are the inhabitants of this region, and their habits and mode of life, are graphically described by the author. "They possess," he considers, "in a remarkable degree the qualities of honesty, virtue, and hospitality—virtues which our civilization seems to have a remarkable power of extinguishing among primitive people." Their wandering habits—habits which lead each *aul* or family to pursue one particular itinerary, which is exactly the same as that of their ancestors, and which never interferes with the movements of other *auls*, though the paths, shown on a map, would meet, cross, and intersect each other in the most apparently entangling fashion—these habits, we repeat, are accounted for by the Kirghiz themselves in a most simple manner. On being asked by the author why each *aul* did not stay in its winter quarters, and not attempt to wander about purposelessly in the summer months, an intelligent Kirghiz replied "Well our fathers never did so, and why should we not do as they have always done?" And this is probably about as near the true reason of their migrations as any other.

On leaving the vicinity of the Yani Daria, our author plunged for the first time into the Kizil-Kum Desert, and its attendant horrors. The face of the country indeed is fair, and its undulations are covered with a rich, dark verdure.

"But all this beauty is deceptive. These gentle hills are only sand, and the verdure which clothes them hides horrors as great as those covered by the roses that twine themselves over sepulchres. Blossoms shoot up, ripen, die, and rot in the course of a few days. The verdure consists of but a rank, soft weed that breaks out into an eruptive kind of flower, which, dropping off at the slightest touch, emits a most offensive odour. Beneath the broad leaves lurk scorpions, tarantulas, immense lizards, often 5 or 6 feet (!) long, turtles and serpents, and the putrifying bodies of dead camels. Once lost in this desert ocean, without guide or water, you may wander for days, until you and your horse sink exhausted to die of thirst, with the noxious weed for bed, winding-sheet, and grave."

Mr. MacGahan resolutely pushed on through this terrible wilderness, in face of considerable physical obstacles, the mutinying of his followers, the death of one of his horses; and after obligingly delivering the mail bag, which he had himself brought, to Colonel Weimarn, the officer in charge of the station of Khala Ata (40° 52′ 52″ N. latitude, and 33° 10′ E. of Pulkova), he not only received no thanks, but was even forbidden to push forward and attempt to join General Kaufmann without his Excellency's written order. The author was in a dilemma. He could not see Kaufmann without his permission, and could not obtain his permission without seeing him, because (*teste* Weimarn) he was too busy to answer letters. With characteristic resolution the author cut the Gordian knot by escaping from the camp in the darkness, and not long after succeeded in coming up with Kaufmann's column at Sheik Arik, on the banks of the Oxus. From this point all seems to have gone as merrily as possible, and Mr. MacGahan became a general favourite with both officers and men. Of the latter he remarks:—

"The Russian soldier is very far indeed from being a savage. He is neither cruel nor bloodthirsty, as far as I have seen, but, on the contrary, rather kind and gentle when not enraged; and I saw many soldiers do little acts of kindness to the Turkman children, during the campaign against the Yomuds, which greatly struck me. The lower classes of the Russian people, although ignorant and superstitious to the last degree, are not by nature either cruel or brutal."

Their childish pleasures sometimes take a shape somewhat unpleasant to the object of their affections. At a banquet given by the Grand Duke Nicholas to his regiment, the author was astonished to see the royal host (after dinner) tossed up and down in the air by his own soldiers. The same extraordinary

compliment was then paid to Mr. MacGahan himself, and it was not until afterwards that he learnt that this is a special mark of affection, reserved for favourite officers.

As our readers are probably aware, there was little hard fighting in the Khivan campaign. The Khivans might have offered serious resistance by fighting from behind walls and buildings, and by destroying bridges after them, but even this latter simple expedient never seems to have occurred to them. The Yomud Turkmen, however, kept up a sort of guerilla warfare, which harassed the Russian troops in some measure, inasmuch as their wonderfully swift horses enabled the Yomuds to evade pursuit. On one occasion, indeed, these fiery horsemen took the Russians completely by surprise, and had it not been for the breech-loaders of the Russian infantry, who came up in time to save them, the Cossacks would undoubtedly have been routed and massacred to a man.

The most remarkable part of the Khivan expedition, and that which will entitle it to rank as one of the most wonderful campaigns ever known, is the manner in which four of the five columns engaged, successfully accomplished their perilous marches across the desert, and converging towards the same point from bases of operation more than 1000 miles apart, actually arrived at Khiva within a day of each other! Their movements are lucidly described by the author, the march of Colonel Verefkin claiming particular attention.

Mr. MacGahan, although not a surveyor, furnishes one or two interesting geographical facts. From Colonel Verefkin he ascertained that the Gulf of Aibugir, which is so conspicuous on all our maps, is now perfectly dry, and that Kara-Kalpacks have commenced to cultivate its ancient bed. A little to the south of Yuzkuduk, which lies to the south-east of the Bukan-Tau Mountains, he came upon a range of mountains which appear not to be marked on any map, but which would seem to be a continuation of the Urta-Tau Mountains, marked on the latest Russian map. These and other features are shown on a carefully executed map of Khiva, and the surrounding deserts, drawn by Mr. MacGahan to accompany the present work.

We cannot conclude without expressing our pleasure at the unaffected style in which the work is written. Indeed, the author goes so far as to disclaim any credit for his exploits.

"The position of a correspondent is often a very embarrassing one. He embarks, perhaps, on an enterprise without fully counting the cost, or foreseeing, or appreciating half the difficulties to be encountered in its accomplishment, and then feels obliged to put on a brave face, and carry it out at whatever risk, when in his inmost self he knows that if he were a free agent, he would be among the very last to undertake it. In this way he often gets a reputation for foolhardiness, or pluck, or perseverance, or 'cheek,' which he really does not merit."

We have little doubt, however, that the reader will award the author more credit than this for his undoubtedly hazardous enterprise, and for the pleasant way in which it is told.

EXPERIMENTAL MILITARY SURVEY OF THE RUSSIAN CONFINES IN ASIA.*

IV.

THE seventh section of the Russian Asiatic frontier—following the line from east to west—passes from Kuitun Mountain (N. latitude 48° 50′) which forms the knot of the Great Altai, the Ektak-Altai, and the Salugem ranges, to Khan-Tengri (latitude 42° 21′), in the Tian-Shan Mountains. In other words, it commences at the sources of the Bukhtarma, an affluent of the Irtysh, follows the ridge of the Great Altai, called at this extremity the Narym Mountains, as far as the sources of the Kurchum (another affluent of the Irtysh), and passing from thence along the Kurchum Mountains and to the eastern shore of Nor-Zaisan, it ascends the Black Irtysh to Ak-tuibe. From the latter point it runs due south across an open waste to Chagan-Obo (4683 feet above the sea level), a point at the knot formed by the Mus-tagh and Tarbagatai Mountains. It then proceeds in a north-westerly direction along the Tarbagatai Mountains to Urdjar (latitude 47° 5′, E. longitude 99° 15′ from Ferro),† where the Russo-Chinese frontier at present terminates. In fact the Russo-Chinese delimitation under the second treaty of Chuguchak (1864), extended from the Kuitun only to Khabar-Asu‡ in the Tarbagatai Mountains; to the south and west of that point there never was a definition of the boundaries of the Russian and Chinese possessions. From Urdjar the frontier may be said to lie along the post road leading from that place in a southerly direction over a desert and steppe country between the lakes Sassyk and Ala-kul to Lepsinsk§ (latitude 45° 31′, and E. longitude 98° 27′ from Ferro). From Lepsinsk the Russian cordon runs westwards along the northern base of the Dzungarian Alatau Mountains to Kopal, falling in before reaching the latter town, with the high road from Ayaguz (now Sergiopol) to Almaty, or Vernoë. From Altyn-Emel, between Kopal and Vornoë, the Russian military line is pushed up the road leading over the Altyn-Emel Pass (3500 to 4000 feet) across the western spur of the Dzungarian Alatau up the valley of the I'li to Borokhudzir and Kuldja. The length of this road from Altyn-Emel to Kuldja is 254 miles. In advance of Kuldja the Russians have a picket post at Mazar, and so hold possession of the entire valley of the I'li River, including those of the Kash, Kunges, and of all its other tributaries lying between the Iren-Khabirgan Mountains, which shut out the Kur-Kara-Usu district on the east, the Khatun Daba range, which extends to Urumtsi, and the Tian-Shan on the south. Ascending the I'li River as far as the easternmost extremity of the Alatau Mountains (called by Semenof the Trans-I'li range), the Russian border passes up the valley

* Opyt Voënnago Obozrenia Rouskikh Granitz vo Azii.

† Ferro West Ex. 18° 9′ 42″ W. of Greenwich.

‡ Sary-Cheku, the crater of Khabar Mountain, is situated in latitude 47° 13′, and longitude 100° 38′ W. of Ferro.

§ Actually, however, the Russians have advanced beyond that line, occupying Bakty within 10 miles of Chuguchak, and Kaptagai, between the Dzungarian Alatau and the Barluk Mountains, between which two points, relatively north and south, a route intersects the valley of the Emil, cutting off Ala-kul from the Chinese district of Chuguchak and throwing it over to Russia. Colonel Veniukof adopts this line as one of actual limitation in the present, by faintly colouring it green on his map.

of the Tekes, the main source of the I'lí, which is thus wholly absorbed. Here the Russians command the northern ascents of the passes over the Tian-Shan, leading to Aksu, Bai, Sairam and Kucha in Eastern Turkistan, as well as the route leading from the sources of the Koksu into the valley of the Yuldus and Khai-dugol or Khara-Shahr River. At the sources of the Tekes, the Dzungarian section of the frontier falls in with the line of the Tian-Shan, which will be separately treated on a future occasion. The distance, as the crow flies, from the sources of the Tekes to Kuitun Mountain does not exceed 567 miles; the frontier line, however, had, in 1872, an extension of 1133 miles, which, under the treaty of Chuguchak (1864)—if the latter had come into operation—would, Colonel Veniukof says, have been curtailed to 985 miles. The peculiarity in this section of the Russian Asiatic frontier is, that it runs zigzag from one end to the other, either across rivers, wide open spaces, and mountain ranges, or following river courses, and falling in for some distance with the direction of the mountain ranges which in the shape of a see-saw figure like this ≷—laid from W.N.W. to S.S.E. closes the great gap between the mountain systems of the Altai and the Tian-Shan.

This configuration of the country gives a series of open valleys, wedging into each other from opposite sides. The absorption by the Russians of the whole of the Black-Irtysh, with the occupation of the basin of the Ulungur Lake, at the head of that valley, would leave the Chuguchak district deeply let in between two sides of the Russian line, and standing at the extreme north end of the sole Chinese line of communication passing from Barkul and Urumtsi through Kur-Kara-Usu. Kur-Kara-Usu has an entirely independent water-system lying between Chuguchak and Kuldja districts, in a valley formed by the Alataù, Barluk, and Orkhochuk Mountains, which stretch in one continuous line on the north, and the Iren-Khabirgan, extending on the west from the Alataù to the Katun-daba, which latter as a continuation of the Trans-I'lí-Alataù—running from the northern side of Issyk-kul—merges with the parallel range of the Tian-Shan, a little to the south-east of Urumtsi, from whence these mountains in single chain, after describing a curve to the north, proceed in a south-easterly direction, separating the former Chinese Nan-lu (or southern line) from the Peh-lu (or northern line), and after passing between Barkul and Khami, finally lose themselves in the Great Desert.

Such is the nature of this country that least of all the other sections of the frontier can the Dzungarian line be termed either definite or permanent. And since the limits of the Chinese and Russian dominions in this quarter have never been defined by any official deed, the Russian Cossacks have accordingly advanced step by step; creeping up the rivers, followed by the Siberian peasant, whom his Government has cautiously transplanted thither, endowing him with the lands thus silently appropriated, without any remonstrance on the part of the drowsy Celestials.

The Russians have been side by side with the Chinese in I'lí and in Dzungaria since the middle of the last century, but the first treaty engagement, referring to this section of the frontier, between their respective governments, was that of Chuguchak, in 1851, which, however, related merely to matters of trade. By virtue of this treaty the Russians established a factory in Chuguchak, where they traded with the Chinese until the year 1855, when at last the factory was burned down by the people, who thus put an end to a traffic with the Russians which, in the course of three years, represented a capital of 8000*l.* This was never resented, nor were the amicable relations between the two empires ever disturbed either by the gradual encroachments of the Russians from the north, or imperilled even by the "inruptions" of the Kalmucks into the Russian borders. There is no doubt, however, as Colonel Veniukof observes, that if the Russians had any inclination to act aggressively on the Dzungarian line, they could make as large strides there as in Turan. The transmigrations of the nomads from one empire to the other, would always afford sufficient cause for recriminations and quarrel, and produce a pressure from the Russian side upon the Chinese, leading to conquest and annexation. In the year 1863 there occurred indeed a serious collision of Russians and Chinese troops near Borokhudzir,* but this led to no grave consequences, and, acting up to the spirit of their policies, the two Governments adjusted the matter satisfactorily. On the other hand if the Russians long abstained from conquests in Dzungaria, it was because their hands were stayed by reasons which did not prevail elsewhere. In the first place the neighbouring territory belonged to a mighty empire, and could not be overtly infringed upon without a serious breach between two great powers bound by international obligations, yet I have read an article by Professor Vassilief, in which that writer advocates an unceremonious violation of all obligations, with respect to the preservation of boundary limits, entered into with China, on the grounds of the studious exclusion by the Chinese of Russians, from countries closed to them (traders included) by mutual agreement.

A slice of Chinese territory here and there could not be put into the scale of these relations. There never has been any call for a break with China, and the Russian military forces were never sufficiently numerous or even on a footing to be marshalled in regular warfare against the banners which the Chinese could array against them. The Russians, however, advanced their outposts one by one without opposition towards the Chinese frontier, occupying the intermediate territories of the Kara or Dikokamenni Kirghizes (called Buruts by the Chinese) and of the Chinese Kalmucks. In doing so they thrust back the nomads upon the mountains in the south, and extended the Siberian line in one direction to the Bukhtarma and thence to Nor-Zaisan, and in another to Ayaguz-Kopal, and Almaty.

* The provocation came from the Russians, who marched two detachments from Kopal to Borokhudzir, then a Chinese post. Refusing to retire beyond the Yugontas Pass over the Alataù, they were attacked by the Chinese. The officers successively commanding the expedition were Captain Golubef, Major Ertofski, Lieut.-Colonel Lerche, and Captain Obukh. It was asserted by the Russians that by the treaty of Peking, the Russian frontier was to touch a point near Borokhudzir, and Colonel Golubef intended to execute a survey up to that point. It would appear, however, that as the rebellion which broke out in Dzungaria in 1864 was then smouldering, the Russians who, from the information which they received, foresaw the probability of the downfall of the Chinese, sought to anticipate it by preparing to seize a point of great vantage in the centre of the I'lí Valley.

Under these circumstances the course pursued was encouraging settlers and colonizing the Cossacks, whose fishing propensities invariably led them higher and higher up the rivers at seasons when the Kalmucks decamped to the south, and when the Chinese outposts were withdrawn to the permanent settlements into the heart of Chinese territories. Thus it was that the Russians gradually felt their way into the valley of the I'lí until, with what the French would call a *savoir faire*, it was finally absorbed by them, that the valley of the Tekes was entered, and that Nor-Zaisan and Ala-kul, with a portion of the Black Irtysh, and almost half the valley of the Emil were lopped off from China, while from the *Zaisanki* post on the north-east, and from Bakty in the immediate vicinity of Chuguchak, the Russians seem to be closing round the latter with all the memory of their forfeited rights.

We will here allow ourselves a brief retrospective glance from the period of the first Russian hold on the Irtysh. That river was first secured to the Russians by the famous Cossack, Yermak, who finally lost his life in it. Quoting Semenof's geographical dictionary, the Irtysh served later as the principal highway along which the Russian population first penetrated into Northern Asia. In 1653,* according to the same authority, the Irtysh was ascended to Nor-Zaisan by the Russian Embassy to China, under the Boyar Theodore Baikof, which passed the Seba,† a left affluent of the Irtysh near Ust-Kamenogorsk. The Turgut Khan, who afterwards died at the mouth of the Volga, was building the famous palaces on that river, known as Ablai's Halls, which now with the adjacent Buddhist monastery present a pile of imposing ruins. In the end of the 16th century, the Russian towns of Tuimen, Tobolsk and Tara sprang up on the Irtysh. In 1715 Peter the Great sent an expedition to the Irtysh under Colonel Bergholtz, with instructions to proceed thence to Yarkand. According to Abramof, Captain Urasof and Ensign Somof ascended the Irtysh to Nor-Zaisan under similar orders in 1719; and in the following year, as is stated by Abramof (the date given by Semenof is 1715), General Likharef proceeded from Tobolsk in thirty-four flat-bottomed boats, with 440 soldiers, thirty field-guns, and six mortars, to Nor-Zaisan, and up the Black Irtysh as far as that river was found to be navigable. In Peter's time a series of forts was erected in this region. The wars of the Kalmucks in the middle of the 18th century, the energetic operations of the Chinese in Dzungaria in 1757, and the agitations consequent on the terrible atrocities committed by the Chinese, awakened the Russians to the necessity of consolidating their own line of frontier. Accordingly, they established the line of the Ishim simultaneously with the foundation of Petropavlofsk, in order to connect that of Eastern Siberia with the Ural frontier. That line subsequently underwent exactly the same process as the lines of the Ural, of Orenburg, and of Eastern Siberia. Losing its significance as a military cordon, through the spread of Russian influence, far in advance of it during the second half of the eighteenth and the beginning of the nineteenth century, it lapsed into a simple line of communication between Russia proper and her Siberian provinces. As the Imperial frontier, it faded away with each stride taken on an average every ten years since the beginning of this century. Ayaguz, now called Sergiopol, was founded in 1831, Kokbekty in 1836, Kopal in 1841. The year 1855 marked a period of considerable advance. To the east of Kopal, in the direction of Chuguchak, the Russians pushed their advanced posts to Lepsinsk, and to the south-west across the valley of the I'lí to Almaty. From Vernoë, round the south-eastern extremity of the Issyk-kul (which is now a Russian lake), and up the valley of the I'lí River, and from the Irtysh to the mountain knot of the Tarbagatai, and other ranges in Mongolia, absorbing the Nor-Zaisan, the Russian appropriations date from 1865, since when also the Russians have absorbed the basin of the Ala-kul. The seventh decade of the present century opened with the seizure of Kuldja, and the Russians entered Kuldja "not for a single day, but for always," as General Kaufmann told the Taranchis of that district in 1871, when the city was occupied by his forces. There remains nothing to the Chinese which is worth preserving, and less still the recovery of which would repay the cost of a great effort. Even the valley of the I'lí, which is by far the most fertile and richest part of the country, is said to have been an expense instead of a source of profit to the Chinese during their tenure of it. Chuguchak and Kurkara Usu are the only places which the Chinese retain in Dzungaria. These, lying in two distinct isolated valleys, communicate with each other by a road leading over the mountain chain, which separates them; and with Kobdo or the country of the Khalkas, and from thence with China by a single track passing from the sources of the Emil to Bulun-Togai, and round the southern extremity of the Exktak-Altai to Ike-Aral Lake. Another route from Chuguchak runs due east over several high mountain passes into the valley of the Black-Irtysh; but the passes here are already commanded by the Russians at the Chagan Obo picket-post, and the road is so difficult that Chinese fugitives, during the rebellion in Dzungaria, preferred the southern and circuitous route to the much more direct but tedious one by the Mus-tagh or Icy Mountains.

The limits of this borderland, passed under review by Colonel Veniukof as a field of military operations, may be thus traced:—On the west the Balkhash, and a line from the mouth of the Ayaguz to Semipalatinsk; on the north the Irtysh, Narym, and Bukhtarma rivers; on the east a line from the sources of the Bukhtarma to those of the Kunges (the affluent of the I'lí); on the south the Tian-Shan, and Trans-I'lí Mountains from the sources of the Kunges through Santash to Khan-taù.

These limits will embrace on the Russian side that portion of the Semipalatinsk region which lies to the east of the road from Semipalatinsk to Sergiopol; and the portion of the Semirechensk region including the districts of Sergiopol, Kopal, and Vernoë with the entire valley of the Upper I'lí. On the southern side these limits embrace the Tarbagatai (Chuguchak) district in its entirety, and portions of the districts of Kurkara-Usu and Kobdo.

Within these limits is comprised a superficial area

* In his annotated edition of Ritter, Semenof dates Baikof's journey in 1657. Abramof, in his paper on Nor-Zaisan (vide *Journal of the Royal Geographical Society* for 1865), starts Baikof from Tobolsk to China in 1665.

† In Baikof's itinerary this river is called the Baska.

of about 279,000 square geographical miles, of which barely 6000 are considered to be fit for purposes of cultivation. The most fertile tracts lie at the bases of the mountains, where the bulk of the population, within the Russian, as well as within the Dzungarian limits, is located. In the summer the nomads,—Kirghizes,—and Kalmucks, ascend the mountains to the higher pastures.

The central portions of the valleys are almost pure deserts, either sandy, as around the Nor-Zaisan, or marshy, as by the shores of that lake and those of Ala-Kul and Sasyk-Kul, and as along the banks of the Irtysh. Without irrigation the soil yields no produce, and rain falls in sufficient quantities only in the vicinity of the mountain ranges. These deserts have a clayish or argillaceous soil, and are either saline or sandy, and in general perfectly horizontal. The steppes to the north of the Tarbagatai with all this have fresh-water wells. The valley of the Black Irtysh is from 30 to 50 miles wide; it has the character of a steppe. The Irtysh is skirted by a jungle from 10 to 13 miles wide, in which the Kirghizes fix their winter quarters. Above Ak-tuibe the lands adjacent to the river are covered with oziers, in which also the nomads take shelter from the snowstorms. The basin of the Black Irtysh is completely separated from that of the Urungu or of the Ulungur Lake, which constitute an entirely distinct water-system. Between the Tarbagatai and the Dzungarian Alataù, the country is pure and very barren steppe, except, as has been observed in reference to the entire region, at the bases of the mountains, where the streams flowing down afford the means of irrigation. The Chubar Agatch hollow, occupied by the Lepsinsk military settlement, is the most fertile spot in this part. The Kopal or Arasan elevated plain, 3200 feet above sea level, ranks next in degree of fertility by reason of a greater moisture. But the fertile lands between the Tarbagatai and the Dzungarian Alataù compose but about 1000 square geographical miles, or 1·40 of the entire area of this steppe, circumscribed as above.

To the south of the Karatal River and of the Dzungarian Alataù is an extensive depression, a sandy waste—a continuation of the desert of the Balkhash penetrating up the I'lí, almost to the very walls of Kuldja, and leaving entirely bare even the banks of the I'lí River. On approaching the Trans-I'lí Alataù the soil improves, but it is only within a couple of miles or so of those mountains that it is found to be suitable for agriculture. Thus the district of Vernoë, with a superficial area of about 26,500 square geographical miles, comprises only 735 square geographical miles of land which can be utilized. The Kuldja district includes about 1470 square geographical miles of arable land, artificially irrigated. Here, in the very centre of the level part of the valley, the Chinese have reared forest plantations.

Atkinson, who professed to have traversed the whole of this region with a free pass from the Emperor Nicholas, and with some Russian Cossacks, gives one less of an idea of its character in his text than through his sketches, and according to these it would appear that it affords nothing but the grandest mountain scenery. He traces his course southward from Tarbagatai to Kur-Kara-Usu without appearing to fall in with the Dzungarian Alataù, which should have crossed his path, and although he skirted the desert along the Iren-Khabirgan, north-east of Kuldja, to the southern extremity of that range, and ventured across the Gobi "to the aûl of the Sultan Sabeck," without ever seeing a single Chinese soldier, and even as far as the suburbs of Barkul, yet there is no idea conveyed in his narrative of steppe or desert, except in his searches for the nomad encampments.*

The Russian border lands, as will be seen from the above figure, illustrating the outlines of the mountain ranges, and from our description of the frontier, lie in the troughs of a sea of desert which may be rather called a strait between the Gobi and the Kirghiz Steppes. Such is also the case of the remaining Chinese districts of the Black-Irtysh, Chuguchak (Tarbagatai), and Kurkara-Usu; the mountain chains above mentioned representing the billows of this sea, with a roll, as it were, in a south-south-westerly direction from the south-western extremity of the Altai to the mountain mass enclosing the Issyk-kul. This section of the frontier, from the character of the country, is broken into three separate sections, which may be named after the water-systems which they respectively embrace or intersect. From the Kuitun mountain knot may be said to commence that progressive Russian frontier which extends westwards to the Caspian, with a vague or undefined limit in the south. On the Russian side the valleys or troughs open towards the north-west, and on the Chinese side, with the exception of the Irtysh and the Emil, the country widens out towards the south-east. In this division of the country between the Russians and the Chinese, the former have the greater advantage in the possession of the northern slopes of the mountains, which are covered with vegetation and forest growth, while the latter (except in Kur-Kara-Usu) face the northern declivities, which here, as is the rule throughout all the mountain systems which traverse this country, as well as farther west, are bare and almost utterly destitute of vegetation.

The strongest Russian positions are those on the Bukhtarma, from whence a descent might at any time be made on Kobdo, and the line of posts from Kopal to Lepsinsk. The troops in the basin of the Irtysh are under the command of the Governor of Western Siberia, belonging to the military circuit of Omsk, while the whole of the Zaisan prefecture, limited on the south and west by the line of the Tarbagatai, belongs to the Semipalatinsk district of Western Siberia. If the Chinese contemplated aggressive operations against the Russians, and beating the Russians at this point, advanced either down the Irtysh or on Ayaguz, or if their attack came from Chuguchak in the valley of the Emil, the region to the south could be entirely cut off from Russia, since they could intercept the Russian communications with Western

* *Oriental and Western Siberia and Chinese Tartary.* Semenof in his preface to a Russian edition of one of Ritter's volumes on Asia reflects strongly on Atkinson's veracity, showing how impossible it must have been to have performed the journeys described by Atkinson, and stating that the information he (Semenof) had gathered in Siberia from the Cossacks who had accompanied Atkinson, and from the officials who had provided the latter with escorts, tended to throw discredit on his narrative. A translation, by Mr. John Michell, of M. Semenoff's interesting preface will be found in the *Journal of the Asiatic Society* either of Calcutta or Bombay for 1865; also in the *Journal of the Royal Geographical Society* for that year.

Siberia along the only existing line from Vernoë to Semipalatinsk. Force is lent to this observation from the fact that the line of communication between Vernoë and the region of the Jaxartes is too extended to be relied upon. On the other hand, it loses force from the counter fact of the absence of Chinese military forces in this region, a circumstance which Colonel Veniukof says, simplifies the problems which the Russians have to solve in the strengthening of their defences along the Dzungarian line. The depôts of artillery are at Ust-Kamenogorsk, Sergiópol, Kopal, and Vernoë, where there are regular fortresses—that of Ust-Kamenogorsk being however vacated. There is a *tête-de-pont* on the I'lí River at the ferry near the mouth of the Tolgar (north-east of Vernoë). All the supplies for the troops, clothing and ammunition, are brought from Omsk and Tashkend. Powder is brought from Kazan (a distance of 1700 to 2330 miles), and shot and cartridges from the Ural (800 to 1800 miles).

The annual provision of flour, grain, oats, and hay made for the frontier forces on this section does not exceed a total of about 800 cwts., at an average price of 4*l.* the cwt. The cost of transit in the spring and autumn, which are the most favourable seasons for transport, as well as for the movement of troops, is ordinarily calculated at 6 roubles the pood for every 100 versts (about 67 miles).

Unity of action among all the military authorities on the Dzungarian line has always been found impossible, and it cannot be established until telegraph wires are laid from post to post. But even then the various detachments in the different valleys, which are so many distinct fields of operation, must act independently of each other, as each, in attack or defence, will be guided by circumstances quite apart from those which may weigh with the others. But the isolation of the forces—say in an aggressive advance—will increase still more. Supposing a force be sent in one direction up the Irtysh and to Kobdo, where there must be another division of the troops, while a second will have to operate in the valley of the Emil, and occupy the passes leading from the south to Chuguchak; a third will operate from Kuldja, marching upon Kur-Kara-Usu, sending out detachments to guard the passes over the Tian-Shan; while a fourth, having for its basis Karakol, at the eastern extremity of the Issyk-kul, will have to keep guard in the valley of the Tekes. And, although this latter constitutes part of the Tian-Shan section of the line, it is under the surveillance of the general officer at Vernoë, who has command of all the troops from the Tarbagatai to south and west of Issyk-kul. Operations with large bodies of troops are here impossible, and the gradual colonization, and at the same time the expulsion of the native population, is the surest and the only means by which this line can be permanently consolidated. On the other hand, a well-organised Chinese or native combination against the Russians might lead to the entire expulsion of the Russians from the country under consideration. Of this there is, however, no fear; the Russians, in the prime of their military life, are far too vigilant to allow themselves to be surprised by any sudden movement of the Kalmucks or Taranchis, who have, moreover, no grievance against them. While the Chinese, notwithstanding their rumoured intention of recuperating their losses, give no sign as yet of anything which need cause the Russians any alarm. It may indeed be expected that, should there be the least foundation for a report of an advance in force of the Chinese for the recovery of their lost provinces, such a movement would be anticipated by the Russians in the seizure of Chuguchak, and in the interception at Kur-Kara-Usu, or even at Urumchi, of the army of the Celestials. It is hard to believe that Kuldja will ever be restored to the Chinese, for it stands in the valley of a river which intersects, at right angles, the only line of communication between Vernoë and the basis (Semipalatinsk) of all the military positions on the Dzungarian line. Should the rumour of the intentions of the Chinese prove correct, the Russians will then have first to deal with them, giving, most probably, a good account of their own selves; then will naturally succeed the question of frontier relations with the Amîr of Kashgar.

The Russian settlements in this border-land, are chiefly along the Irtysh and its right affluents, on the northern slopes of the Dzungarian Alataù, and at the northern base of the Trans-I'lí-Alataù. There are detached settlements at Kokbekty, on the Kurchum, at the Zaisanski post, at Urdjar, Bakty, and Borokhudzir. The settlers are principally married soldiers, of line regiments and Cossacks, and they all number —peasants and troops—in the aggregate 37,000 individuals, of whom, not more, however, than 12,000 are scattered along the advanced line between the Irtysh and the I'lí.

A few words here on the earlier history of this country. Dzungaria, with the I'lí, appears to have been originally inhabited by a people called Ou-Sun, distinguished from the neighbouring nations by having blue eyes and red beards. These, about the sixth century, were expelled by a Turk people, who, after remaining masters for several centuries, yielded to the victorious arms of Genghiz-Khan and his "blue" Mongols. The Mongols broke up into two great divisions—Mongols proper and Eleuths or Kalmucks —the former having, for a considerable time, the sway over the latter, until at last the Kalmucks threw off the yoke, when one of their tribes, that of Dzungar, gave its name to the country and to its people. Towards the end of the 17th century, Kanghi, the second emperor of the Tsing, or pure dynasty, extending his dominion even to Badakhshan and Khokand, effected the conquest of the Eleuths or Dzungars and their country. Under Arabdan, the Dzungars, however, recovered their independence. Arabdan, dying in 1720, was succeeded by Amursana, who, having put down Tavatsi, a second claimant to the khanship—with Chinese aid, 1755—turned traitor to China, and defeated two Chinese armies sent against him. He succumbed, however, on a third attack, in the reign of Kien-lung, 1757, and died in Tobolsk in the same year. It was during these wars that Dzungaria was depopulated. One million Eleuths are said to have been put to the sword in 1754, while the bulk of the Turguts of Kobdo, removed to the banks of the Volga.* It was at the period to which we have brought this relation that the Russians first came into contact with the Chinese on the borders of Dzungaria. Hastening to seize what they could,

* This event, as well as the history of the Chinese Embassy to the tribe inviting its return, are described by Gerbillon.

ere the Chinese had consolidated their conquest, the Russians advanced their line from Ust-Kamenogorsk up the Irtysh, and extended it along the Ishim through the Kirghiz steppes.

There are now no large Chinese centres of habitation in front of the Russian lines. Chuguchak is still for the most part in ruins. The Tungan population was driven out in 1867 by the Taranchis, and removed to Urumchi; the natives of Bakty have even carted away from Chuguchak loads of bricks for Russian buildings. Kur-Kara-Usu remains in a state of utter demolition. Bulun-togoi,* at the head of the sources of the Black Irtysh, which is the residence of the Kalmuck chief—Chagen-Kegen—and Tulta, in the valley of that river, are insignificant places. Djin-ho and Takianzi, lately visited by Mr. Dilke, are small settlements of the remnants of the Chinese population of I'lí, which have sprung up since the rebellion of the Tungans and Taranchis.† The native population of the country within the limits herein described, consists of Kirghizes, Kalmucks, Taranchis, and Tungans. The Kirghizes number 580,000 individuals. The Kalmucks, divided into Turgouths, Tourbeths, Hoshoits, and Hoits, make a total of 320,000, of whom 200,000 remained faithful to the Chinese, but have scattered over various parts of the country. The first named are the most numerous; they comprise 120,000 individuals, and can place in the field 12,300 horsemen. They are governed by Chagan-Kegen, who is at one and the same time their administrative chief and spiritual pastor, who, in enforcing obedience in all things, invokes the higher authority of the Hut'ukh'tu. These people are Buddhists, and have always been foes to the Mussulman Kirghizes; they are nomads also, but not in an equal degree with the latter.

The Taranchis, who came next in point of numbers, compose a body of 39,000 individuals, principally grouped in the valley of the I'lí. These people were originally transplanted from Eastern Turkistan, chiefly from the district of Kharashar, by the Chinese, in the reign of Kien-Lung. They resemble in their mode of life the Sarts of Turkistan, but their language is of Turk not of Persian origin. The name Taranchi admits of several interpretations: in its simple form the word taran means millet; taranchi signifies field labourer, and may be taken also to mean "people of the bloody sweat;" and this appellation of the people seems to have attached to them since the Chinese first planted them in Dzungaria, and made them the hard-working slaves of their military colonists. On the outbreak of the Muhammadan rebellion in the North-Western Provinces of China in 1863, these people first joined the Tungans, who, sending a wing of their army into Dzungaria, aided these slaves to throw off their Chinese yoke; the Taranchis then turned on their allies, massacred a large number of them and drove the rest, with few exceptions, out of the country.

The Tungans number not more than 4,700 individuals in this region. These are now grouped in four settlements, of which Suidun is the principal one. These people who are of Turkish origin, and Muhammadans, stirred up the rebellion in Hansu, which ultimately ended, in 1864, in the severance from China of all Eastern Turkistan. Having succeeded in upsetting the Chinese authority, the Tungans of Dzungaria sought to establish relations with the Russians, but the representations which they made to the Russian Government in this matter were unheeded. A quarrel breaking out in Dzungaria in 1867, between the Taranchis and the Tungans, the latter were beaten in several engagements* and withdrew, some to Manas and Urumchi, others to fortified settlements to the north-west of Kuldja; but in 1871, before the Russians occupied Kuldja, these were nearly all annihilated by the Taranchis. The animosity of these two people to each other has not been explained; they spring, it is true, from distinct races; the Taranchis appearing to be the descendants of those Eleuths whom the Chinese deported to Eastern Turkistan, and reimported later into Dzungaria, when the latter country was depopulated by constant wars and wholesale massacres; but there is among both the tradition of a common home in Eastern Turkistan; the memory of the first deportation of the Eleuths is probably lost in the later recollection of their subsequent removal, and both Taranchis and Tungans are devoted followers of Islam.

Besides all these races, there are Sibos and Solons, Chinese, Manchus, and Chakhars, of whom there were on the Russian territory about 30,000 in 1871; 15,500 Solons have settled in the Kuldja district, while another portion of this people have adopted the Russo-Greek religion, and have settled on the Sarkan, being turned into Cossacks.

Colonel Veniukof names fifteen routes through Dzungaria, the most interesting of which are two to Kobdo from the Zaisanski post: the more northerly one leading through Ak-tuibé up the Irtysh to the sources of the Kiran on which Tulta is situated, thence across the Extak-Altai,† and the other passing round the southern extremity of that range. The road from Chuguchak to Urumchi (422 miles)—the old Chinese posting road—is easy; it passes through a now desolated country. The route from Kuldja to Chuguchak, through the Kaptagai gorge (270 miles)—the former Chinese military route—is fitted only for pack animals; but at lake Sairam it falls in with the carriage road from Urumchi to Kuldja.

From Kuldja to Kur-Kara-Usu, Manas and Urumchi (472 miles) over the Talk Pass, the road is practicable for wheeled carriages. Once well lined with settlements, this route also passes now through a desolated country. The distance from Vernoë to Kuldja is, by one road, across the Charyn, 240 miles; by another, fording the Telek, and encountering no sands, 270 miles. From Vernoë to the Muzart Pass—over the Merké plateau—the distance is 263 miles, traversable only by pack animals. From Karakol on Issyk-kul to Kuldja over Ketmen Pass, 183 miles. Kuldja is distant from Aksu, 361 miles. The route, which leads over the Muzart, is so difficult that horses have to be led most carefully by the bridles. Captain Shepelef, in 1872, traversed this pass, and has described it as being so very difficult that in some parts the packs have to be taken off the horses' backs and carried over the ledges

* This place has suffered from Amîr Yakub's Tungans, who, in November, 1873, scoured the country from Urumchi to Kobdo and Bulun-togoi.—*Journal de St. Petersbourg*, No. 84, 30th March (11th April).

† To this subject we may have occasion to refer in greater detail on another occasion.

* Vide *Journal de St. Petersbourg*, 1/13th March, 1856.

† Here are two passes, the Sunduruk and Hairatu.

of the rocks; and in others, on the southern side, where there is an "immense sea of ice," the horses have to be let down the steeps by means of ropes. Recent discoveries have thus fully corroborated Chinese accounts of this pass. (Vide pp. 53, 54, *Histoire de la Vie de Hiouen-Thsang*, by Stanislas Julien.) After the occupation of Kuldja, immediate steps were taken by the Russian authorities, to ascertain the nature of the passes leading to Kashgaria. The passes examined were the Muzart, Kok-su, Dagyt and Narat, all excepting the first, leading into the basin of the Yuldus, or head-water of the Khara-Shahr River.

A few observations on the two great rivers which run through this section of the frontier, and we will proceed to a conclusion, briefly noticing the Russian travels through Western Mongolia. The Irtysh is navigable to Nor-Zaisan; the mouth of the Black-Irtysh is almost closed with shallows, and upwards the river can bear boats drawing only 2 feet as far as Ak-tuibé. Above the latter point the fords are numerous, but the course of the upper stream has not been explored. The lake is deep and navigable, the only drawback being its flat shores, which preclude the use of keel-bottomed vessels. Full particulars of this lake will be found in Abramof's paper (see *Journal of the Royal Geographical Society* for 1865; and see Abramof's paper on Semipalatinsk for many interesting particulars with reference to Kuldja and Chuguchak, *Journal of the Royal Geographical Society*, vol. xxxii., 1862).

The I'lí was partially explored by Mr. Fisher in 1872, when it was found that between Old and New Kuldja boats of only 2½ feet draught could be floated upon it, and that, too, only in flood time (twice a year); below Old Kuldja to the I'lí (281 miles) settlement, boats of that capacity can pass at all times. Mr. Dilke says that opposite Kuldja the river is very wide and deep and swift, and that it is intended to introduce two little steamers on it, but up to what point the river is navigable he does not state (see *Proceedings of Royal Geographical Society*, No. 29, 1874).

According to Mr. Fisher, it takes forty days to tow a boat up from the I'lí settlement to Borokhudzir (147 miles).

Mr. Helmersen, in 1869, communicated to the Imperial Russian Geographical Society of St. Petersburg an interesting report of a journey to Chuguchak and Kobdo, performed by Lieutenant Arefius Nesnaef in the year 1771. He also produced a map, bearing date 1724, which, with the document referred to, he had found in the military archives. It appeared from an inscription on the map that it was a result of three journeys performed by different Russian officers, viz., that of Nesnaef to Kobdo; that of Major Zelenof in 1784,* "from Katun fort through the former Dzungarian dominions to the Chui, Tandjila and Tengi Rivers, over the Altai to the Bukhtarma and so back to Ust-Kamenogorsk;" and that of Major Bogdanof, "from Ust-Kamenogorsk to the Tarbagatai." Nesnaef, on reaching Chuguchak, was turned back by the Chinese, who told him that for the execution of his mission he should go by the Narym, which he accordingly did, traversing the Suok Pass. Mr. A. Printz, who travelled to Kobdo in 1864, and surveyed the route over the Suok, was, therefore, not the first European, as he says he was, who performed this journey. In recent times, namely in 1873, Mr. Matusofski made an instrumental survey of the country, as far south as Bulun-togoi; Russian traders have already accompanied caravans to Kobdo, but to Khami and Barkul no one has as yet ventured, although the information collected by the Russian authorities at Vernoë and Kuldja enable the Russians to form a tolerably accurate conception of the country. It may be observed that if the Russians have seldom displayed a spirit of adventure by passing far beyond the protecting lines of their own Cossacks, they have done much in concert with numerous German naturalists and explorers to verify the determinations of the old Jesuit fathers. They have done even more than this. Several eminent Russian sinologists have made translations or abstracts of various Chinese histories and accounts of travel, with which the journals and "proceedings" of the Russian Imperial Geographical Society have been so full for the last ten or fifteen years.

Colonel Veniukof, who deserves no small praise for his eminent services in the cause of geographical science, has himself published numerous articles, having travelled far and wide in North-Eastern Asia. In 1861, for instance, he published a highly interesting paper entitled "Sketches of the Trans-I'lí Region and of the Country of the Chu River," to which he appended a long and valuable list of routes and a long list of astronomical points, taken by the well-known M. Zakharof, from the books of Si-yu-tu-chi and Si-yu-shui-doi-tsi, which comprised the results of the observations made by the Catholic missionaries in the years 1775 and 1759.

ROBERT MICHELL.

* Evidently a misprint.

ADVENTURES IN MOROCCO AND JOURNEYS THROUGH THE OASES OF DRAA AND TAFILET. By *Gerhard Rohlfs*. (Sampson Low, 1874.)

THIS book is a translation of articles published in the *Ausland* and other German periodicals, several years ago; and is an account of the author's travels, in the disguise of a Muslim, through portions of Morocco. The work is entirely wanting in exact geographical information, and is unreliable as a guide to history. Thus, in the chapter on Consulates, it is stated that, in 1852, "the English Admiral Napier was sent for the purpose of revenging insults offered to British subjects." Here the author is wrong both in his date, and as regards the object of the service to which he alludes. Next we are told that Prince George of Hesse Darmstadt captured Gibraltar for England! More authentic history mentions one Admiral Rooke, and tells us that Gibraltar was captured, so far as Prince George was concerned in the operation, for a certain titular King Charles of Spain. Similar blunders occur in this and other chapters; while the narrative is dry and uninteresting. The account of the really new and important journey made by the author to the south of the Atlas range from Agadier on the Atlantic, by the Draa oasis and Tafilet, to Algiers, is particularly disappointing. It is contained in fifty meagre pages at the end of the book. We do not consider that these old papers were worth the trouble of translation; and if a new book was to be made out of them, the total absence of all allusion to their former publication is unfair to the reader. The orthography is bad and inconsistent, but at least the names of places might have been spelt in the same way on the map and in the book. Everyone has heard of the Sallee rovers. The place is spelt *Sla* in the book and *Sallee* on the map. We have *Arbat* in the book, and *Robat* on the map; *Asamor* in the book, and *Azamore* on the map; with many similar inconsistencies.

THE ENGLISHMAN'S ILLUSTRATED GUIDE BOOK TO THE UNITED STATES AND CANADA. (Longmans, 1874.)

THE author of this little work, after travelling over all the routes he describes, has succeeded in preparing a very excellent guide, full of all necessary information, and in a convenient and portable form. It includes an account of the Yellowstone National Park, and of the Yosemite Valley; and a very comprehensive statistical appendix, which gives the work considerable value as a book of reference, apart from its usefulness as a guide.

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A MANUAL OF BOTANY, ANATOMICAL AND PHYSIOLOGICAL, FOR THE USE OF STUDENTS. By *Robert Brown, M.A., Ph.D. F.L.S., F.R.G.S., &c.*

DR. BROWN has undertaken a laborious, and at the same time a most useful work; and he has brought to the task a mind well-stored with botanical knowledge, and a habit of accurate and conscientious research. In the second volume, which is not yet published, there will be a history of the science, a description of the economic and medicinal plants, and the laws regulating the distribution of plants over the world will also be explained. This, therefore, will have the most interest for geographers, but the present volume also deserves their attention, for a knowledge of the anatomy and physiology of flowering plants is essential to an intelligent study of their geographical distribution. In the first volume of Dr. Brown's Manual we are given sections on the anatomy of the elementary tissues of plants, on nutrition, on reproduction, and on general phenomena connected with plant-life. In the latter section the chapter on germination, and on the vitality of seeds, deserves the special attention of geographers; for there is no point of greater importance, in connection with the laws of plant distribution. This first volume is well illustrated, and is a comprehensive and excellent text book. We look forward, with pleasure, to the appearance of its successor, which, while it cannot fail to be prepared with equal ability and care, will have a more special interest for geographers.

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AFRICA: GEOGRAPHICAL EXPLORATION AND CHRISTIAN ENTERPRISE. By *A. Gruar Forbes.* (Sampson Low, 1874.)

THE author of this little book has set himself the task of condensing into a small compass the information contained in the numerous books of African travel that have appeared of late years, with the object of furnishing a distinct and definite conception of what has been accomplished, and of what has been attempted in the way of discovery. He commences with an allusion to the early labours of the African Association, which might, with advantage, have been made somewhat more circumstantial and complete. The account of Tuckey's Expedition up the Congo, the only one which has ever reached the river above the rapids, is also too meagre even for a sketch of this kind. The general results might at least have been given, if only in a few lines. Denham, Clapperton, and Lander, are dismissed in less than a page; and the rest of the introductory chapter is occupied with a general account of African geography. The bulk of the work is a condensed sketch of the travels of Livingstone, Burton, Speke, and Baker; and is not, on the whole, a satisfactory production. The idea was good, but the execution is wanting in perspicuity and lucid arrangement; and there is an absence alike of due proportion in the details and of unity in the general design.

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WESTWARD BY RAIL; A JOURNEY TO SAN FRANCISCO AND BACK, AND A VISIT TO THE MORMONS. By *W. F. Rae.* (Isbister, 1874.)

MR. RAE takes his readers by the Pacific Railway, across the Prairies, over the Rocky Mountains, to the City of the Saints, the capital of the Golden State, and the Queen City of the Pacific. They will find him a very agreeable and well informed companion; and on his return journey, he introduces them to the City of Boston, and Harvard University, and conveys his impressions of America and the Americans. The introductory chapter contains some useful information respecting the Californian mines, the vicissitudes of the Mormon settlement, and the development of traffic across the Pacific railway.

Correspondence.

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To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—I beg to offer a few remarks on a question suggested by Mr. Michell's paper in the June number, p. 113. It is there said or implied, I do not quite make out whether as a quotation from Veniukof or not (but I believe it comes originally from Ritter), that the Belasaghun of the Muhammadan historians and geographers was the same as Karakorum. This is greatly to be questioned.

That Belasaghun was a corruption of the Mongol Balghassun, "city or royal residence," as is intimated in the same passage, seems highly probable; but I think we must look for the place so called a good deal to the west of Karakorum. It is, I believe, chiefly mentioned in connection with the brief empire of Karakhitai (1125-1213). This empire was founded by a prince of the Khitan dynasty of Leao, who escaped with a body of followers from Northern China on the overthrow of that dynasty by the Kin (or Golden Kings of Marco Polo) in the early part of the 12th century. They first established themselves at Imil, supposed to have been in the Tarbagatai territory near lake Ala-Kul. A khan, "of the race of Afrasiáb," was then dwelling at Belasaghun, and was much harassed by the tribes of the Karlúk, the Kipchák and the Kánkli. He sent to beg help from the Prince of Karakhitai, begging him to come to his capital where he would make over all authority to him. This the Prince of Karakhitai did, subdued the obnoxious tribes of Turks, and then proceeded to conquer Kashgar, Khotan, and Bishbalik.*

The position of the great tribes of Kipchák, Karligh and Kánkli is known, and lay, speaking roundly, along the north of the Caspian, the north of the Aral, and the north of the Jaxartes, as far east as Issikul. By the story, Belasaghun should lie somewhere between these and Imil, probably therefore somewhere about the valley of the I'lí. Al-Biruni places it in longitude 91° 50', or not far beyond Taraz, a position which, however loose, is inconsistent with its being in remote Mongolia. There are other indications less definite bearing the same way. In *Cathay and the Way Thither*, I had placed Belasaghun hypothetically much further east, and to the north of Kamul, but a note of Professor Vámbéry's in his *History of Bokhara* (German edition, I. 126), showed me that this was incorrect.

H. YULE.

PALERMO, *June 17th*, 1874.

* See Oppert's *Presbyter Johannes*. First edition, pp. 127, 130, 131, 132, 156; *Spienger's Post und Reise routen*, p. 19 and Map No. 2. D'Ohsson I have not at hand.

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HANSEN (R.) Anteckningar gjorda under en antiquarisk forkiningsresa sommaren 1870 Vestra Nyland. 8vo., pp. 58. 19 Plates. Stockholm, 1873.

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Cartography.

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Kiepert's Physical Wall Maps.*

It is very much to be regretted that the pecuniary resources required for improving the position of our schoolmasters, and for furnishing our national schools with the requisite aids to instruction, are not forthcoming as freely as are the vast sums expended upon armaments and well-paid civil functionaries. Apologists will always be found when it is a question of attending to so-called material interests, or even to administer to vanity or luxury, but our educational establishments have to be conducted on the most economical principles; they are refused the material support which alone would enable them to do their work efficiently, and the results attained by them are consequently far less satisfactory than would be the case under more favourable circumstances. Geography is that branch of instruction in which we are peculiarly interested. It can be conducted only with the aid of good maps, and other illustrations, yet, what can be more disheartening than an inspection of the maps which are to be found in large numbers in our public schools. The wall maps are far from being ornaments to the school-room, as they might be, and the atlases placed in the hands of the pupils, possess only one quality to recommend them, namely cheapness. Cheapness, indeed, appears to be the guiding principle, whilst quality and scientific value are altogether disregarded. Yet there are not wanting school-maps, produced by scientific geographers, and calculated to meet every reasonable requirement; and, although these maps are necessarily more expensive than the wretched manufactures referred to, their price, looking to the quality of the work is still moderate, and ought not to deter the school authorities from introducing them. Amongst maps of this superior class we unhesitatingly place Kiepert's series of physical wall maps, which has been prepared under the auspices of the Berlin School Board.

These maps are designed to illustrate the great physical features of the globe, but, as many schools may not be in a position to acquire two sets of maps, the one physical, the other political, Professor Kiepert has inserted the names of the principal towns and the boundaries of states, and teachers are thus able to colour their maps politically. But, as Professor Kiepert very justly remarks, by doing this they will inevitably break up the continuity of physical features, and we trust the maps will be allowed to remain as published originally.

The fact of these maps constituting a series is rendered evident not only from the general treatment of the subject, but likewise by a certain uniformity of scale. Instead of first fixing upon the size of the paper and then forcing the country to be delineated within the margin thus arbitrarily created, Professor Kiepert has first of all chosen a suitable scale for his maps, upon which their size depends. The continents of Asia, Africa and America, are thus drawn on a scale of 1 : 8,000,000, and Europe on double that scale, and by these means an idea of the relative extent of countries is conveyed to the pupils, which maps, drawn to size, fail to convey altogether. It is undoubtedly of considerable importance that correct notions respecting the extent of various countries should be formed, and for this reason we hail with pleasure the two hemispheres, which have been substituted for a Mercator's chart, now so universally used; for the latter, though it offers certain advantages, and is a great favourite with many persons on account of its continuity, fails altogether where it is proposed to illustrate the relative extent of lowlands and tablelands. The author likewise deserves credit for having delineated with equal care the whole of the countries embraced within the margin of each map, instead of leaving large blanks, as is frequently done from reasons of economy. The map of Asia thus embraces the whole of Europe with a considerable portion of Africa, that of Africa the whole of Southern Europe with the Mediterranean and all Asia as far as the Caspian and the Persian Gulf, whilst Europe includes Western Asia and the Mediterranean.

The main object of the maps consists, of course, in a delineation of the orographical and hydrographical features, and the river systems, lakes, tablelands and mountain ranges are consequently shown with a considerable amount of detail. But in addition to these, we find the ocean currents on the two hemispheres, the northern limits of trees, of barley, wheat and oats, of the beach, of fruit-trees, the vine, the olive and the date-palm on the map of Europe; the northern limit of trees, of barley, of the vine, and of palms on that of Asia, the region of tropical rain, and on that of Africa; and the northern limit of trees, of foliferous trees, of maize, the vine, and of palms on that of North America. The maps of Asia, Africa, North and South America are supplemented, moreover, by political maps placed in the margin. The delineation of the orographical features forms, however, the most conspicuous feature. The lowlands (up to 200 m. on the hemispheres and the map of Europe, up to 300 m. on the map of America, and up to 400 m. on those of Asia and Africa) are left blank. The highlands are indicated by pale and dark tints, and the principal mountain chains are shaded in the usual style. This composite system conveys a far more vivid notion of the orographical feature of each country than would either a mere hypsographical map or a map with the hills shaded merely in the usual manner, for whilst the tints indicate the broad features and mass elevations in an unmistakable manner, the shaded hills supply details sufficient for purposes of instruction.

Geographical progress has become so rapid within the last few years that compilers of maps are hardly able to keep pace with it. Yet, on examining those before us, we are bound to acknowledge that note has been taken of the latest discoveries, and not only the lake region of Central Africa (with the Welle flowing to lake Tsad and Livingstone's Lualaba to the Congo), but also the region of the Upper Oxus are laid down in accordance with the latest information received. In conclusion, we are glad to be able to recommend this series of wall-maps to our teachers, and to assure them, that they will prove of material service in conveying a correct notion of the grand physical features of the continents.

* H. Kiepert's Physikalische Wandkarten (Physical Wall Maps).

Nos. 1 and 2.—Östlicher und Westlicher Planiglob (Hemispheres). 10 sheets. Size, 42 by 84 inches. Berlin, 1873. 10s. mounted; on rollers, 22s.

No. 3.—Europe. 1 : 4,000,000, 9 sheets. Size, 66 by 51 inches. Berlin, 1873. Price 9s.; on rollers, 19s.

No. 4.—Asia. 1 : 8,000,000. 9 sheets. Size, 66 by 51 inches. Berlin, 1873. Price, 12s. in sheets; 22s. on rollers.

No. 5.—Africa. 1 : 8,000,000. 6 sheets. Size, 44 by 50 inches. Berlin, 1873. Price, 8s. in sheets; 16s. on rollers.

No. 6.—North America. 1 : 8,000,000. 5 sheets. Size, 44 by 42 inches. Berlin, 1874. Price, 7s. in sheets; 14s. on rollers.

No. 7.—South America. 1 : 8,000,000. 4 sheets. Size, 34 by 42 inches. Berlin, 1874. Price, 6s. in sheets; 12s. on rollers.

Hypsographical Map of the Alps.

M. A. Steinhaeuser, to whom geographers are already indebted for a large number of hypsographical maps of various portions of the Austrian Empire, has just published a map of this kind, which embraces the entire region of the Alps, from the Rhone in the west, to the

* Hypsometrische Uebersichtskarte der Alpen (1 : 1,700,000) aus den Arbeiten von Papen, Ravenstein, Berghaus, Ziegler, Streffleur u. A. zusammengestellt u. ergaenzt von A. Steinhaeuser. Vienna, 1874. Two editions, one tinted, the other with names.

plains of Hungary in the east. The contours are laid down at intervals, vertically, of 1000 feet, and the country is tinted according to elevation, the darkest tints having been chosen to indicate the most elevated regions. No notice has been taken of glaciers, and very properly so, as their introduction would certainly have interfered with the purely hypsographical features, which the map is designed to illustrate. Nor have any names been inserted to mar the clearness of the design. The nomenclature, as well as the contours, in brown, but no tints, will be found on a companion sheet. There is no doubt that M. Steinhäeuser has succeeded in placing before us a very intelligible picture of the uplands and ramnifications of the Alpine system—this work, however, is altogether devoid of plasticity. Those curious to ascertain whether the desirable appearance of relief might be given to the map by employing a different system of tinting may make use for that purpose of the companion map referred to.

French Admiralty Charts.

THE *Dépôt de la Marine* is exhibiting an unwonted activity in the publication of charts, no less than thirty-six of which have been issued since the beginning of this year. It is true that most of these charts are merely French editions of the surveys made by other nations, particularly England, and that they do not, therefore, add to our stock of knowledge to the same extent as the less numerous, but more original, publications of the British Admiralty. Yet the Dépôt de la Marine deserves credit for placing within the reach of French sailors the results of the surveys carried on by neighbouring nations, and for popularizing and rendering more generally available the information collected. These French charts are somewhat inferior, as respects style of engraving and quality of paper, to the British charts, but their extraordinary cheapness compensates to a very great extent for this inferiority, and partly accounts for it.

Beginning with Europe, we find plans of Dover, Folkestone, and Boulogne,* a map of Heligoland,† and a chart of a portion of the coast of Norway.‡ The Mediterranean is represented by five sheets referring to the island of Sicily,§ by a chart of the channels between Greece and the island of Candia,‖ and by three sketch-charts of Cyprian roadsteads.¶ There is a chart of the harbour of the small island of Porto Santo, near Madeira,** and another of the island of Fernao Noronha.†† A small sheet is devoted to the delineation of some of the minor harbours on the south-western coast of Africa.‡‡ The island of Madagascar, which is growing in importance as a commercial field, has its geography elucidated by plans of five harbours on its north-western coast,* and these, as well as the sketches of portions of the Gulf of Siam,† and of the roadstead of Mitho, the capital of French Cochin-China,‡ are based upon original French surveys. The charts referring to the glorious Inland Sea of Japan,§ however, as well as those of certain roadsteads of Yeso and Saghalien,‖ are again based upon the labours of British or Russian seamen. The illustrations of the hydrography of the New World are confined on this occasion to three of the West India Islands, viz., Tobago, Santa Lucia, and the small passage island near Porto Rico.¶

E. G. RAVENSTEIN, F.R.G.S.

* Côtes sud d'Angleterre.—Port de Douvres, Port de Folkestone, Port de Newhaven, par Méa. Paris, 1874. 7½d. each.

† Mer du Nord.—Helgoland, par A. Martin. Paris, 1874. 10d.

‡ Mer du Nord.—Cartes des côtes ouest de Norwége entre Lille Feisten et Skudesnaes, par Morin. Paris, 1874. 1s. 8d.

§ Mer Mediterranée.—Sicile. Port de Syracuse, par A. Martin. Paris, 1874. 10d.
Sicile. Plan de Catane, par A. Martin. Paris, 1874. 7½d.
Sicile. Baie de Milazzo, par Martin. Paris, 1874. 7½d.
Sicile. Girgenti. Port Empédocle, par E. Morien. Paris, 1874. 7½d.

‖ Mer Mediterranée.—Carte des passages entre la Gréce et l'ile de Candie, par Germain. Paris, 1874.

¶ Mediterranée. Ile de Chypres. Croquis du Mouillage de Famagouste, par F. Dufour. Paris, 1874. 5d.
Chypres. Croqui du mouillage de Limassol, par F. Dufour. Paris, 1874. 5d.
Chypres. Croqui du mouillage de Lanarca, par F. Dufour. Paris, 1874. 7½d.

** Ocean Atlantique.—Ile de Porto Santo, Baie de Porto Santo, par Delamare. Paris, 1874. 10d.

†† Ocean Atlantique Sud.—Ile de Fernand Noronha, par A. Martin. Paris, 1874. 10d.

‡‡ Ports de la Côte S. O. d'Afrique.—Baie du Hottentot, Baie Hondeklip, B. Rodewal, Port MacDougall, Baie Spencer, Port d'Ilheo, par Martin. Paris, 1874. 5d.

* Côtes ouest de Madagascar.—Iles Radami; baies de Raminitoc Rafala; Port Radama. Paris, 1874. 10d.
Baie Narenda et rivière Luza, par F. Dufour. Paris, 1874. 10d.
Port Mazambo, par F. Dufour. Paris, 1874. 5d.
Baie Majambo (Bombetuk), par F. Dufour. Paris, 1874. 10d.
Baie Boyenna, par Dufour. Paris, 1874. 7½d.

† Golfe de Siam.—Mouillages des 4 îles au sud des îles Balua, par Dufour. Paris, 1874. 7½d.
Mouillages d'Ham-Ninh et de Bai-Doe, par Delamare. Paris, 1874. 7½d.
L'Entrée du Cua-Giong, îles de Phuquoc, par Delamare. Paris, 1874. 5d.
Croqui des îles Pirates, par Delamare. Paris, 1874. 10d.
Mouillage et les îles Bai-Ba-Luong, par Delamare. Paris, 1874. 10d.

‡ Basse Cochin-chine.—Plan de la rode de Mitho, par Delamare. Paris, 1874. 7½d.

§ Japon, Mer Intérieure. Plan du port d'Utchi-no-Umi (île Shozu-Sima), par Dufour. Paris, 1874. 1s. 8d.
Golfe de Oosaka, entrée de Agi-kawa. Par Méa. Paris, 1874. 5d.
Golfe de Oosaka, entrée du Kitsu Gawa, Port de Sakai. Par Méa. Paris, 1874. 5d.

‖ Japon. Ile Yesso. — Mouillages d'Oterranai, and Port Endermo, par Méa. Paris, 1874. 7½d. each.
Japon. Ile Saghalien. Rade de Poro Tomari, par Delamare. Paris, 1874. 5d.

¶ Mer des Antilles.—Ile de la Culebra ou du Passage, par Delamare. Paris, 1874. 1s. 8d.
Ile de Sainte Lucie, par E. Morien. Paris, 1874. 1s. 8d.
Ile de Sainte Lucie; Baie du Gros îlet, par Dufour. Paris, 1874. 5d.
Partie et de l'île Tabago, par Delamare. Paris, 1874. 10d.

New Maps.

Berghaus (H.). Physikalische Wandkarte der Erde (Physical Map of the World on Mercator's projection). Gotha, 1874. 10s.; mounted 14s.

Carte de France dressée au Dépôt des Fortifications (Map of France prepared at the Dépôt of Fortifications) au 1:500,000. Sheet 5. Paris (Erhard), 1874.

Atlas cantonale de Maine-et-Loire (Atlas of the cantons of Maine and Loire), dressé par le service vicinal. Angers, 1874.

Les Nouveaux Forts de Paris (the new forts of Paris), par Erhard. Paris, 1874.

Carte des Etablissements de Sauvetage (Lifeboat Stations) au 1er Janvier, 1874, par Erhard. Publiée par la Societé Centrale de Sauvetage des Naufragés. Paris, 1874.

Map of European Russia, exhibiting the more important branches of production, based upon the 4 sheet map of the Statistical Department. Scale, 1:7,350,000. St. Petersburg, 1873. (In Russian).

Chekanovsky, Map of the Government of Irkutsk, published by the Siberian Section of the Russian Geographical Society (in Russian). Irkutsk, 1873.

Cubas (A. Garcia). Carta geografica y administrativa de los Estados Unidos Mexicanos (Map of Mexico) formado con presencia de los datos mas exactos y recientes. 9 sheets, 1:2,000,000. Mexico, 1873.

Gararrete, Mapa elemental de la republica de Guatemala (Sketch map of Guatemala). Paris, 1874.

Gautherot (F.). Nuevo Mapa del Peru, segun los ultimos estudios (a new map of Peru). Paris, 1874.

Log Book.

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Lieutenant Cameron's Expedition.—News has been received from Lieutenant Cameron up to the 28th of February, 1874, when he was at Ujiji. He was in good health, and describes the country he passed through as very beautiful. He had obtained a large canoe with a sail and 14 oars, and was about to explore the lake thoroughly, before commencing a journey into the Manyuema country. The market at Ujiji is excellent, fish, eggs, yams, sweet potatoes, sweet limes, and pomegranates being abundant.

Lieutenant Cameron has obtained a good set of lunar observations at Ujiji, and finds the longitude to be 30° 4′ 30″ E., which agrees well with his dead reckoning, the latter being 29° 59′ 30″ E. His latitude of Ujiji by observation is 4° 58′ 3″ S., and by dead reckoning 4° 55′ 30″ S. The point of departure for the dead reckoning is Unyanyembe, a distance of 180 miles. He makes the height of lake Tanganyika above the sea by four aneroids 2740 feet, and by seven boiling point thermometers 2540 feet; Speke made it 1844 feet, and Livingstone 2884 feet. Speke's longitude of Ujiji was 30° E., and latitude 4° 54′ 56″ S.

Lieutenant Cameron found at Ujiji Dr. Livingstone's journal and map from Mikindany, and his sextant-stand. He was about to forward the documents to the coast, by a special mail. He has also sent home water of lake Tanganyika for analysis. The journey of this intrepid young traveller has thus been most important, both as regards the value of his own observations and the safety of Dr. Livingstone's papers. We confidently trust that he will be supplied with sufficient funds, and that the Cameron Expedition Fund will continue to find support among all lovers of geography and admirers of single-handed enterprise. Subscriptions are received by Messrs. Ransom, Bouverie & Co., 1, Pall Mall East. The list of subscribers is headed by the Duke of Edinburgh, and the subscriptions already amount to 600*l.*; but more is urgently needed.

The Arctic Campaign of 1874.—It is a bitter disappointment to all true geographers, to all well-wishers of the navy, and to those who have any regard for the ancient fame of Englishmen as explorers, that the change of Government and other untoward circumstances, should have caused the postponement of the despatch of an Arctic Expedition for another year. The feeling in the navy is, however, stronger than ever, and several of the most distinguished among the young officers are volunteers. Meanwhile, Captain Wiggins has sailed from Dundee, in the steamer 'Diana,' with the object of passing between Novaya Zemlya and the main, to the Sea of Kara, and reaching the mouths of the Siberian rivers. Captain Wiggins, who is an experienced seaman, was an examiner for the Board of Trade, at the Port of Sunderland. We hear that Mr. Leigh Smith, with characteristic generosity, has put a good stock of preserved provisions on board the 'Diana,' in case of falling in with the Austrian Expedition. Mr. Rickaby, who was in Baffin's Bay last year, on board the 'Erik,' has taken the 'Samson' to Spitzbergen, for sporting purposes.

Geographical Results of the Kashgar Mission.—Accounts of the excursion to the Pamir Table-land, by members of Mr. Forsyth's Mission to Kashgar, will be found in other parts of the present number (See pp. 139 and 173). The results of this excursion may be summed up as follows:—There are two Karakul lakes on the plateau, the drainage from one flowing east, and from the other west. The eastward stream is the Ghiz, which, passing through the Ghiz-Dawan, becomes the Kashgar River. That flowing west joins the stream from the Ghiz Lake or Pamir Kul, and forms the Murghab River. It enters Shignan at Bartang, and falls into the Oxus five days' journey below Kila Punja, at a place called Vamer. Shignan (Shaghnan) has been ascertained to be perfectly independent, and is ruled over by Yusuf 'Aly Shah, who also owns Roshan, and the adjoining Pamir. The territory of Wakhan extends up to the junction of the Aktash stream with the stream flowing from Lake Karakul, and contains the great, little, and Alichur Pamirs. The true water-parting between the east and west is the Kizilyart plain, belonging to the Amîr of Kashgar. The Shignan Pamir and the Kizilyart Plain are inhabited by wandering Kirghiz. The other Pamirs have been abandoned of late years. From Tashkurgan to the small Karakul Lake is one day's march, from the small to the great Karakul five days, and from the great Karakul to Ush is six days' march. The Barojit Pass into Chitral is reported to be extremely easy, and open during the whole year, except about six weeks in March and April.

The map facing page 374 of the number of *Ocean Highways*, for March 1873, will be useful in reading these reports; and the article on Central Asia, at page 373 of the same number, gives some further account of the Pamir, and of the chiefships of Shignan, Roshan, and Wakhan.

The Treaty with the Amîr of Kashgar.—Mr. Forsyth signed the Treaty of Commerce between the British Government and the Amîr Muhammad Yakub Khan, Ruler of Kashgar and Yarkand, on the 2nd of February, 1874.

By the 1st Article the subjects of each state are at liberty to enter, reside in, trade with, and pass with their merchandize through all parts of the dominions of the other; and shall enjoy all the privileges and advantages which are accorded to the subjects in such dominions, or to those of the most favoured nation. By the 2nd, the merchants, of whatever nationality, are at liberty to pass from the territories of one contracting party to those of the other, at all times and by any route they please; but, by the 3rd, European British subjects, entering the dominions of the Amîr, must be provided with passports certifying their nationality. The British Government, by the 4th Article, engages to levy no duties on goods imported by any route over the Himalayan Passes; while the Amîr engages to levy no import duty exceeding 2½ per cent. *ad valorem*. By Article 6th, it is arranged that the British Government and the Amîr shall be at liberty to appoint representatives, and commercial agents subordinate to them, within

their respective territories; such representatives having the rank and privileges accorded to ambassadors by the law of nations; and the agents being entitled to the privileges of consuls of the most favoured nation. The 8th Article provides for the way in which civil and criminal cases, in which British subjects are concerned, shall be decided within the territories of the Amîr, and the other articles refer to the filing of legal documents, disposal of the effects of deceased persons, and to debtors. The treaty consists of 12 articles. It was ratified and confirmed by the Governor-General on April 13th, 1874.

The Russians on the Persian Frontier.—The two telegrams from the Berlin correspondent of the *Times*, regarding the proceedings of the Russians in the Turkman country north of the Atrak do not appear to have attracted the attention they deserve. Disappointed in their attempt to obtain Persian co-operation in their project for occupying Marv, the Russians seem to be striving to enlist in their service their quondam enemies, the Yomut and Akhal-Tekeh Turkmans. The Yomuts, even those on the Persian side of the Atrak, are alleged to have asked for incorporation with Russia; and the Akhal-Tekeh, whose territory lies on the direct route from Krasnovodsk to Marv (see map in *Ocean Highways* for April, 1873), to have asked for protection, not only against the attacks of their brethren the Marv Tekeh, but also against the Persian Kurds. It may be remembered that these Kurds were placed in colonies on the frontier by Shah Abbas the Great nearly three centuries ago, to protect it from these very kidnappers and robbers. If there is no fable of the wolves asking the bear for protection against the sheep dogs, here, at all events, is the moral. It should be understood that published maps of this region are very inaccurate, especially as regards the river Atrak. The result of Colonel Baker's journey is to show that the Atrak does not receive tributaries from both sides, but from the north only. Hence, if a frontier line is allowed to be drawn along the course of the Atrak, not only many Persian villages, but the important Persian town of Shirwan will be annexed to Russia. Indeed, so far as a Russian Ukase can do it, this is a *fait accompli*.

Disordered State of Southern Persia.—The disorders which accompanied, and were supposed to have been caused by the famine in Persia, have not disappeared with returning prosperity. We hear that Sultan Murad Mirza has been re-appointed Governor-General of Fars: the Shah having been obliged to supersede his own son in order to obtain the services of this statesman—the ablest and most experienced of the Kajar princes. The disorganized state of the country renders the roads so unsafe, especially between Bushire and Shiraz, that commerce is almost at an end. Things are in such a state that the baggage of Captain Napier, second son of the Commander-in-Chief in India, was plundered near Kazerun, only two months ago, though accompanied by a powerful escort. Murad Mirza is the one man in Persia who is able to cope with the turbulent wandering tribes of Fars and Khurasan. But since the original accession to power, in 1872, of Mirza Husain Khan, the Prime Minister who accompanied the Shah to England, he has been kept in the background. Now, however, finding himself unable any longer to dispense with the services of his able uncle, the Shah has promoted him from the insignificant Government of Isfahan, to that of Fars, one of the three most important in the kingdom. The Persian news, in the *Pall Mall Gazette*, of June 19th, informs us of the return to power of "Mirza Khan" (meaning Mirza Husain Khan) which took place many months ago, only with the inferior title of Minister of Foreign Affairs: he is no longer Sadr Azam. The further statement of the *Pall Mall* that "the Sultan Mourad, the grand uncle of the Shah," has suffered banishment, is quite erroneous; it should be that Sultan Murad Mirza, the uncle (not the grand-uncle) of the Shah, has been promoted, as stated above, to one of the highest appointments in the gift of his nephew. We are surprised to find these mistakes in a journal which is, as a rule, exceptionally accurate as regards its eastern news.

The Peruvian Survey of the Upper Amazons. — Last May, the Peruvian Admiral Tucker, so long the chief of the Hydrographic Commission on the Amazon (see *Ocean Highways* for October, 1873, p. 268-70, and the *Geographical Magazine* for May, p. 82), proceeded to New York with a commission from the Peruvian Government to publish the results of his surveys. A work of real geographical importance may be expected from the labours of Admiral Tucker and the officers who served under him, while exploring the principal Peruvian tributaries of the Amazons.

The Boundary between Peru and Brazil.—Commissioners of both nations have been at work, on the River Yavari, with the object of settling the boundary between the Brazilian Empire and Peru, southward from the Amazon. They have completed their labours; but we regret to hear that the Commissioners, Captain William Black and the Barão de Teffé, have suffered severely from illness, while the Brazilian assistants, Karl von Hoonholtz and Joao Ribeiro da Silva died, and were buried on the banks of the Yavari. The Commissioners returned to Tabatinga on the 1st of last April, after having overcome extraordinary obstacles in ascending the river, in spite of which we understand that they explored and surveyed its course.

Exploration of Bolivia.—The Government of Bolivia is about to send an expedition, to start ultimately from Sauces, and to discover a route direct to the river Paraguay, in the neighbourhood of Otiquis. A retired American naval officer, Commodore Cilley, had explored the unknown Otiquis, accompanied only by five sailors. He found a good port and dry land, starting thence to Santa Cruz de la Sierra, which place he reached last April, having performed most of the journey on foot. He proposed to build a railroad from the port on the Otiquis to Santa Cruz, to be ultimately continued to Chuquisaca. His scheme, which includes a 7 per cent. guarantee from the Bolivian Government, is under consideration. Commodore Cilley is well provided with instruments, and is a good surveyor. Another project is to construct a railroad between La Pay and the worm valleys to the eastward, called the Yungus, which yield the famous chocolate, coca, and cascarilla.

Proceedings of Geographical Societies.

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ROYAL GEOGRAPHICAL SOCIETY.

June 1st, 1874.

AT a meeting of the Royal Geographical Society on the above date, Sir Bartle Frere in the chair, Dr. W. B. Carpenter read a paper on "Further Inquiries on Oceanic Circulation."

June 15th, 1874.

A MONTH'S JOURNEY IN KHOKAND.

SIR HENRY RAWLINSON took the chair at 8.30 P.M. In opening the proceedings, Sir HENRY said he had been requested to preside in consequence of Sir Bartle Frere having been obliged to go to Cambridge in order to receive an honorary degree. It was only due to the Society that he should notify the arrangements which had been sanctioned by Her Majesty's Government with regard to the late Dr. Livingstone's family. Sir Bartle Frere had already informed them that in addition to the pension of 200*l*. a year which had been bestowed on the family, an application had been made to Her Majesty's Government to fix some further capital sum for the family, the amount recommended by the deputation which had waited on the First Lord of the Treasury being 10,000*l*. or 11,000*l*. The Government, however, after due consideration, had thought that all claims would be liberally met by awarding the sum of 3000*l*. to the family, and that amount would in due course be presented to Parliament to vote. Besides that, the Government had also undertaken to pay all the arrears due to Livingstone's followers. On their arrival at the coast it had been found that a sum of nearly 1000*l*. was due for arrears of wages, and the acting Consul-General at Zanzibar drew for the amount on the Royal Geographical Society. The Society, however, had felt that though they took the greatest interest in Dr. Livingstone's proceedings, they were not responsible for the expenses of his servants, and represented that to the Government, who had, in a proper and liberal spirit, consented to take the whole expense on themselves. It would, therefore, be understood that all pecuniary matters between the Livingstone family and the Royal Geographical Society were concluded, he believed to the satisfaction of all parties. Sir Henry then introduced Mr. Schuyler to the meeting as a gentleman who had recently returned from a very interesting journey in Central Asia, being the only European who had ever travelled in the interior of Khokand.

Mr. SCHUYLER, the Secretary of the American Legation at St. Petersburg, then gave an account of some months' journeying in Khokand last year. He said he had been in Central Asia for eight months in 1873, having left St. Petersburg in March, and returned there in November. His head-quarters had been chiefly at Tashkend and Samarcand; but during the time he had had the opportunity of spending a month in Bokhara, passing through the little-known province of Shahrisabe, and also of spending a month in the Khanate of Khokand, returning home by Lake Issyk-kul and the province of Kulja. He had left the Russian town of Khojent on the 19th June, in company with a Russian Engineer officer, who was visiting the knanate for the purpose of buying timber to construct a bridge over the Syr Darya. Travelling, of course, on horseback, as the only means of locomotion, he had visited the capital city, Khokand, going from thence in a north-east direction to Balyktchi and Utch-Kurgan, on the river Naryn. Hence he had travelled to the south-east to Andijan, one of the largest cities of the country, and to Ush, in the extreme east of the khanate. He had been prevented from going on to Kashgar, or from making any excursions in the mountains in the direction of Karategin, in consequence of a rebellion which had broken out amongst the Kirghiz. In spite of a written promise he had from the khan, the authorities refused to allow him to proceed unless he would give them a paper taking all responsibility from them in the event of his death. When finally allowed to go to the mountains, he had been deceived by his guide, who, by the direction of the authorities, misled him on the road back to Khokand, to which he had therefore to return. He had had, however, an opportunity of seeing the life of the people, and of making himself acquainted, to some extent, with the commerce and industry of the country. At Khokand he had been kept under a species of surveillance, not being allowed to leave, after 7 P.M., the serai where he was living with the Russian merchants. He had been taken to Utch-Kurgan for the purpose of being presented to the khan; but he had only been allowed to see him at a distance of 500 feet. The khan and his subjects, never well disposed to the Russians, seemed at that time to be more suspicious of them than ever, and travelling with Russians, and with Russian introductions, they could not realise that Mr. Schuyler was other than a Russian. Khokand was an almond-shaped valley, 160 miles in length by 65 miles in extreme width, surrounded on all sides by mountain ranges or plateaus, narrowing to small hills near Uzgent, which is the only road into the khanate practicable for wheeled vehicles. The most fertile part of the country was in the neighbourhood of Andijan and the territory lying between the rivers Syr Darya and Naryn. After the junction of those two rivers their united stream run between high banks, and became useless for the purposes of irrigation, and the rest of the country only became cultivable so far as the mountain streams running down into the plain were available for that purpose. About the city of Khokand itself there was a sandy desert 10 or 12 miles wide, extending in nearly every direction. Although Khokand was spoken of as being one large valley, it was really a series of small oblong valleys, separated by low, narrow ridges, often of trap, which seemed to run from east to west. The climate was more equable than in the district of Russian Turkistan, being warmer in winter when little snow fell, whilst in summer, though the day was hardly bearable, the nights were cool and comfortable. The mountains abounded in minerals, and in many places coal and iron had been found, as well as naphtha and petroleum. The commerce with Russia amounted, in 1872, to about 500,000*l*. in value, the chief exports being cotton and silk. The yearly exports of cotton in the raw state were about 8,000,000 lbs., and of silk 200,000 lbs. The population of the khanate was probably under one million, and sharply divided into two classes, the settled inhabitants and nomads. The settled population was chiefly composed of Usbegs, speaking Turki; but in the Western district there was a considerable number of Tadjiks, a people of Persian origin; and there were, as in all parts of Central Asia, a number of Hebrews, Hindoos, and occasionally Affghans. All the civil troubles of Khokand were caused by the hostility existing between the settled population and the nomads, who were composed of Kara-Kirghiz and Kipchaks, numbering in all not more than 300,000. The Kipchaks lived to the north of the river Naryn; while the Kara-Kirghiz lived chiefly in the mountains of the south, cultivating the land along the foot hills, and pasturing their flocks in the mountain valleys.

THE KASHGAR MISSION.

SIR HENRY RAWLINSON said he proposed to bring before the Meeting some of the geographical results of Mr. Forsyth's Mission to the Amîr of Kashgar. So much has been written of late years on the subject of the country which used to be called Western China, but which is now better known as Eastern Turkistan, that I

may presume you to be acquainted with its general features and history. You know, for instance, that it occupies the great interior basin of Central Asia, intermediate between Russia and British India, being bounded on the north by the Tian-Shan, or Celestial Mountains, and on the south by the Kuen-Lun, or mountains of Little Tibet. The skirts of this basin being one alluvial deposit, and being watered by streams from the circumjacent mountains, are well cultivated and densely peopled; but the interior is a desert throughout, composed, for the most part, of a sandy waste, with forests of jungle along the river-beds. The people are a fine, frank, hardy race; Muhammadans, but not bigoted, very friendly indeed to Europeans, and superior, according to the experience of our officers, to all other Asiatics with whom they had been in contact. Indeed, the pictures given by Mr. Forsyth and his officers of the hospitable and unassuming manners of the people of Yarkand and Kashgar, their industry, intelligence, probity, and activity both of mind and body, impress one most favourably after the accounts one generally has of the sloth, and dirt, and misery, and depravity of the East. This country maintained its independence from the time of Timour to the latter half of the last century, when it was overrun by the Chinese, in whose hands it remained until eleven or twelve years ago, when the people rose in rebellion and drove out their Chinese oppressors, placing themselves under the rule of a certain Yakub Beg, a Kokandi of Andijan, a soldier of fortune, who, having fled before the Russians, came upon the scene at this fortunate moment. Yakub Beg, or the Amîr, as he is now called in virtue of a firman from the Sultan, has proved himself a very wise and able leader. He has repressed brigandage, encouraged trade, raised a very decent military force, and generally strengthened and improved his country; his only fault, indeed, seems to have been a certain lust of territory, which has prompted him to extend his conquests too far to the eastward. Not content, indeed, with Aksu and Turfan, he has pushed on to Goroomelie and Manas, across one of the spurs of the Tian, thus coming into contact with his old enemies the Chinese, who still hold Barkul and Haniel, and placing himself in a somewhat difficult relation with the Russians at Kulja.

Our first communications with this chief were opened by Shaw and Hayward in 1868. Since then Mr. Forsyth, of the Bengal Civil Service, was deputed by Lord Mayo to Kashgar, but got no farther than Yarkand, owing to the chief being engaged in fighting the Tungans at Goroomelie. During the last winter, Lord Northbrook has resumed the idea of opening out commercial relations with Turkistan, and has sent to Kashgar, under the direction of Mr. Forsyth, one of the best-appointed missions that has left India since the days of Malcolm and Mountstuart Elphinstone. Lord Northbrook, indeed, greatly to his credit, seems to have recognised that, in visiting our almost unknown country, there are other things to be thought of besides political relations; that it is, indeed, of almost equal interest and importance to investigate the geography and geology, and natural history of the country, to examine into its trade, and products, and manufactures, to collect information regarding its ethnology, and the religion, and character, and manners and customs of the inhabitants. All these objects seem to have been duly cared for in the composition of the mission, of whose reports, relating mainly to geography, I propose to read extracts to you this evening.

Sir HENRY RAWLINSON then read a series of extracts from letters written by officers engaged in the Forsyth mission to Kashgar, which he said would redound greatly to the credit, not only of Forsyth himself, but to the British nation, of which he was a citizen. The extracts were from letters by Col. Gordon, Capt. Trotter, and Capt. Biddulph, and referred exclusively to the geographical discoveries made in the course of the journeys.*

* See pp. 139-144.

Mr. SCHUYLER having given some interesting details of Central Asian etymology calculated to throw some light on the geographical nomenclature of the district, a vote of thanks was passed to him, and the proceedings terminated with the announcement that the annual meeting would take place on the following Monday, at 1 P.M., and the dinner the same evening.

Meeting of June 22nd, 1874.

THE PRESIDENT'S ADDRESS.

THE anniversary meeting of this Society was held, under the presidency of the Right Hon. Sir H. Bartle Frere, K.C.B., at 1 P.M., in the hall of the University of London, and was attended by Major-General Sir Henry Rawlinson, K.C.B.; Lord Cottesloe; Count Münster, German Ambassador; Malcom Khan, Persian Minister, &c., &c.

The Royal (Founder's) Medal, for the encouragement of geographical science and discovery, was awarded, through Count Münster, to Dr. Schweinfurth, for his explorations in Central Africa, his discovery of the Uelle river, beyond the south-western limits of the Nile basin, and for his admirable work, "The Heart of Africa," in which he has recorded the results of his travels; and the Victoria or Patron's Medal was presented, through Mr. Bateman, to Colonel P. Egerton Warburton (now in Australia), for his journey across the previously unknown western interior of Australia, from Alice Springs, on the line of overland telegraph, to the west coast, near De Gray River.

Public school medals were presented as follows: Physical Geography—Gold, L. Weston, City of London School; bronze, F. C. Montague, University College School. Political Geography—Gold, W. H. Turton, Clifton College, Bristol; bronze, L. Jacob, City of London School.

Sir BARTLE FRERE then delivered the annual address on the progress of geography. After congratulating the members on the continued prosperity and activity of the Society—no fewer than 342 new members, besides 9 honorary corresponding associates, having been elected during the year, making 2809 ordinary and 76 corresponding members on the rolls of the Society—the right hon. gentleman proceeded to mention the losses by death during the year. The one, he observed, that had produced the most unfeigned sorrow in every quarter of the globe was that of the great explorer, David Livingstone—so many reflections were suggested by his late exertions, his sufferings, his death in a land which he himself was first to explore. The circumstances connected with the return of his faithful followers, and the ultimate interment of his remains in England, made it difficult to review the events of a life thus recently closed with the ordinary ken of the friend or the chronicler. And yet, was there not a true consolation for all who mourned his loss, as they calmly endeavoured to think upon those motives and ends which, in his hands, lent a constant lustre to geography, and rendered the great traveller's membership amongst the Fellows of the Society a matter of continual satisfaction? Could they conceal from themselves the fact that the Society to which he had so often contributed priceless stores of actual observation had felt an increase of vigour and prosperity from its close association with his career? That mark by which the advancement in science would be constantly detected in future ages they perceived at a glance to be already stamped indelibly on modern geography, and no hand had helped to imprint it so clearly and sharply as Livingstone's. History must decide whether his greatest glory was gathered as the explorer or as the determined opposer of slavery. If Africa was large enough for his wanderings, the slave trade was dreadful enough for all his pity. A lesser energy would have been swallowed up in the vastness of either, and a weaker heart would have stood still at the cruelties which he exposed and frustrated. Sir Bartle then gave

a minute history of Livingstone's career, starting from his birth-place at Blantyre, near Glasgow, in 1813, to his death on the shores of Lake Bangweolo, in May, 1873, and to his interment in Westminster Abbey in April last.

Sir Bartle expressed regret that the Society had been unable to dispatch an exploring expedition to Smith Sound, and referred to the unsuccessful issue of the steps taken to secure the aid of the late Government for that purpose. He said that the change of Government had delayed any further steps being taken; but the Council hoped to bring the subject before the present Ministers. In conclusion the President referred to the hydrographical surveys undertaken by the Admiralty during the past year, to the deep-sea exploratory voyage of the 'Challenger,' to the Indian Marine Surveys, to the geographical progress in Central Asia, America, New Guinea, Italy, Palestine, Persia, and elsewhere.

Chief Justice Daly, President of the American Geographical Society, and Mr. T. M. H. Livingstone, son of the great explorer, were elected Fellows of the Society.

In the evening the Fellows and their friends dined together at Willis's Rooms.

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BERLIN GEOGRAPHICAL SOCIETY.

WE have received the printed "Proceedings" of this Society, bearing date 11th of April, which contain a few letters, dated the end of March, from Drs. Rohlfs, Ascherson, and Schweinfurth, on the final operations of the Libyan Desert Expedition. Rohlfs, Zittel, and Jordan had arrived at Dachel, from their excursion, about the middle of the month, and were preparing to go on to Siwah, and thence to strike the Nile about Esnek. There is remarkably little of interest in any of the letters; Zittel's geological discoveries appear to be the most important fruits of the expedition, while Schweinfurth, at Chargeh, had been able to collect some new kinds of birds of passage and a very few botanical specimens.

GERMAN AFRICAN EXPEDITION.

Dr. BASTIAN furnished the meeting with an exposition of the doings of the African Society, more particularly with reference to Dr. Güssfeldt's recent journey up the Quillu. Close to Kama-Chitomoo the river for the first time becomes rocky; by Maniamatal, the banks increase considerably in height, and the last trading station is reached in the neighbourhood of the Bumina cataracts. After crossing the parallel mountain ranges through which the Quillu here breaks, Dr. Güssfeldt came amongst the forest villages of the Bayumbe, which border on the Balumbo, and on the 7th of November he made ready for his trip into the Yangela country. In N'Congo he had to pass the boundary or frontier which is here marked by a big gate somewhat similar to the two gates in the wooden wall on the frontier of the Loango country, between Quillu and Luema. As the doctor continued his journey, the character of the country changed; the heavy forests became thinner, and the landscape assumed a park-like appearance; picturesque views presented themselves occasionally, and bare, dome-shaped mountains filled up the background. At Nunsi (about 2100 feet above the sea) a good view of the Yangela country was gained, and the eye ranged over it as far as the Ba-Tetye land, which consists of grassy plains traversed by mountain ranges running from E.N.E., and rising in height to the southward. At the village of Chikengene in Yangala, Güssfeldt described the scenery as reminding him exactly of Switzerland. By the village of Tondo the skull of a gorilla was discovered, proving that its *habitat* had been reached; and shortly after, the Upper Quillu, after making a great bend, was touched at a point where it is from 350 to 400 paces broad. After crossing over to Mayombe, Güssfeldt returned to Chimbek Mankossu, and eventually to Chinchoxo, which he reached on the 2nd of December, and where the other members of the expedition had assembled to make preparations for the great interior journey. This will probably be directed through the Shin Tetye country to the Mombuttu land of Schweinfurth, crossing the equator in the heart of Africa. An extraordinary drought prevailed on the coast, no rain having fallen; the expedition expect, however, to benefit by this circumstance, as the rivers will thus offer less obstruction. The health of the entire party was pretty good, and Dr. Falkenstein had been exercising his curative art on several Europeans along the coast.

Dr. Leng will be attached to the expedition in the capacity of geologist, and he will repair to the Ogowai River, where Herr Woermann, a Hamburg shipowner and merchant, has promised to render him assistance. He will make for the furthest point which has been reached by traders, and explore the geology of the neighbourhood. It has been ascertained from travellers that the tribes a little way in the interior have extensive dealings and frequent communication with those further south, their languages also having a very close affinity. Dr. Leng will accordingly follow the course of the Ogowai above the falls, and thence ascend the Okanda, which all accounts tell us leads through an open country of a strikingly different character. He will then endeavour to effect a junction with Dr. Güssfeldt's party. Should, however, it appear probable that he might successfully penetrate into the heart of the country, by a north-easterly route, the Society will then take measures to supply him with the necessary equipment.

In order to carry out the project of exploring Inner Africa, it will be necessary to occupy Kassandye, as an intermediate station, and thence to work toward the Muata Yambo kingdom. Should financial considerations admit of additional supplies being despatched to that point, it will doubtless, contribute to the success of the expedition.

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FRENCH GEOGRAPHICAL SOCIETY.

Meeting of May 22nd, 1874.

M. CHARLES MAUNOIR informed the meeting that the Geographical Society at Lyons intended next year offering a prize medal, value 500 francs, for the best memoir on the geographical distribution of silk. Two other medals would be offered for competition, one of which would be for an essay on the best means for the diffusion of geographical science.

Mr. WALKER states, in a letter from Elobé, near Corisco (Gabûn), that he left the French travellers, MM. Compeigne and Marche, on the Okanda River, and encloses a letter from M. Compiègne, dated February 12th. They had reached as far as Ossé, in the country of the Okanda, and had succeeded in making arrangements with the King for their further journey to the Otjebo tribe. M. BOUVIER stated that he had received the journal of these travellers from the 25th of December last to the 12th of February.

Intelligence has been received from MM. FAU and MOREAU, now on a mission to Birmania. They give a description of the mineral wealth of the country, and mention more particularly its wells of petroleum and mines of rubies.

The Abbé DURAND read a letter from Father Duparquet from Loango. In describing the banks of the river Kiloango (Chiloango), which is used as a water-way for carrying palm-oil to the factories on the coast, the missionary states that several European factories have lately been established there, the greater number of them belonging to Dutch merchants—one, however, called Shiuma, which is situated at the upper part of the river, belongs to the French. Father Duparquet adds an account of the kingdom of Kakongo and its capital Kinghile.

The Rabbi MARDOKHAI BEN ABI SEROUR was present at the meeting, but being unable to speak French, M. Duveyrier, after pointing out on a map the extensive and interesting journeys this Jewish gentleman had made, stated that he was born at Aqqa, a town in the basin of the Dhra'a River, Sahara. His first journey brought him to Sûs, where he recollects having seen, in the district of Tazerwâlt, the ruins of an ancient city, some of the stones bearing inscriptions which perhaps might be either Phœnician or Latin. He then went to Merrâkesh, Rebât, Tanja (Tangier), and Gibraltar. There he embarked for Malta, Tunis and Alexandria. After a trip to Cairo, he passed by sea to the Holy Land. In Asia, he stopped at Beyrût, Jaffa, Jerusalem, Latakiê, Antakiê, Haleb, and on the shores of the Lake of Tiberias. From thence he returned to Tunis, and visited Sûsa and all the principal towns of Syrtis Minor, Sefâqes Gâbes, the Island of Jerba, and Tripoli. In Algeria he travelled from Algiers southwards to Laghuât, the country of the Beni-Mezâb, Melthîli, and continuing his way to the east he passed by Sîdi 'Oqba, the oasis of Sûf, and entered the Tunisian Sahara at Nafta. Passing by Tôzer and Gafça in the Jerîd, he arrived at the northern portion of Tunisia at Qairuân, a holy city of the Muslims, and then returned to Sûf, where he was detained for six months by illness, His further travels led him to Tamentît, in Tuât, and also to the great markets of In-Çâlah and Timmimûa, the former situated in the southern, the latter in the northern part of that cluster of oases. From Tuât he returned to Aqqa. Looking then for a new field of travel, Mardokhaï journeyed to Timbuktu by the road of Tendûf. He passed fourteen years in Timbuktu, where no Jews had previously been admitted. On his arrival the inhabitants treated him very cruelly; but soon afterwards, as Timbuktu recognized the government of El-Hâjj 'Omar, the persecution ended, and Mardokhaï was allowed to resume his journey along the river Niger to Sansandi southwards, and to Eghedesh and Gôgô eastwards. His furthermost point east from Timbuktu is Ahara.

Meeting of June the 3rd, 1874.

THE Paris Geographical Society held its first meeting in the hall of the Societé d'Encouragement on June the 3rd; such a change had become necessary on account of the insufficiency of the rooms at Rue Christine No. 3, to admit the increasing numbers of Fellows who attend the meetings.

Admiral DE LA RONCIERE LE NOURY, President of the Society, reported further progress with regard to the Congress. Referring to the communication made at the last meeting by the President of the Council, M. Delesse, as to the contributions of the public offices to the Congress, he said that the Ministers past and present, had all of them shown the greatest readiness. The only exception was the Minister of Public Works. The City of Paris had not yet given an answer. The Admiral had sent to the various foreign Governments on the subject of the formation of a Committee of Honour. The German Ambassador had replied, stating that the Geographical Society at Berlin would be represented at the Congress, and that that body had already appointed its commissioners. Lord Lyons, Ambassador of England, had also answered, and communicated the names of the English Commissioners, as well as a list of gentlemen proposed for the Committee of Honour. The answer of Austro- Hungary came through the hands of Count Apponyi.

The President of the Council, M. DELESSE spoke on the present state of the Society, which now numbers 1003 members. The fund for travels has been augmented, and is now represented by a sum of 10,000 francs, out of which 1500 francs will be sent to M. Dournaux Dupéré.

The Secretary, M. MAUNOIR read the correspondence, including several letters communicated by M. Meurand, Director of the Consulates. One from the French Consul at Baghdâd contains information on the provinces of El-Haça and Qatîf in Eastern Arabia; a second, from M. Gasselin, contains information on the Sahara; and a third, from M. Delaporte, mentions some particulars respecting M. Dournaux Dupéré, the French traveller in the central Sahara. M. Dournaux Dupéré had written to M. Delaporte in Tripoli, stating that he was about to leave Ghadâmês, in company with M. Joubert, on the way to Rhât, and asking for a letter of recommendation to Ikhenoûkhen. Two letters from M. Dournaux Dupére were also read. M. Tissot, French Minister in Morocco, reports that the question of the historical identification of the ruins at Moulaï Edrîsis definitively settled by the discovery of inscriptions. MM. Fau and Moreau writing from Barma, state that the king of that country intends consulting them on the subject of the roads of intercourse to be constructed there. They were on the point of starting on a journey in the south-east of the kingdom.

M. DAUBREE announced the return from China of the Abbé Armand David. That missionary and naturalist had been prevented from attending the meeting by a serious indispositon.

Dr. HAMY referred to the two little Akka negroes, and exhibited their photographs. He said that Professor Richard Owen had examined them in Cairo. Their stature is small for their age, yet they are by no means feeble. The eldest of the two is 1.11 metres high; the youngest between nine and ten years of age is only 1 metre high. They are pretty well proportioned, but their legs show no traces of calves, and their flat feet are remarkable by a prominent heel. The Akka have nothing in common with the characteristics of the Soaqua or Bushmen. Their age prevents the formation of any precise conclusion as to the adult proportions of the Akka race. Yet M. Schweinfurth is wrong in comparing them to the Obongo and the Soaqua. Except in their diminutive height, the Akka resemble the Shilluks and the Denka.

M. L. DE PUYDT made a communication on the Isthmus of Darien, with reference to the practicability of an interoceanic thoroughfare. From 1861 to 1865 M. L. de Puydt travelled in the Cordillera with the object of finding a passage from the Atlantic to the Pacific Oceans. He explained what had been done for the geography of that part of South America previous to his researches, and described the results of his own work from the river Tuyra, on the Pacific watershed, to the Puerto Escondido del sud on the shores of the Atlantic.

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